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VOLUME THE FIFTY-EIGHTH

BEING

RECORDS OF ZOOLOGICAL LITERATURE

RELATING CHIEFLY TO THE YEAR

1921

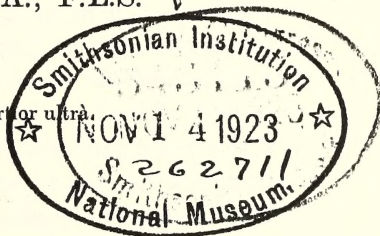
COMPILED FOR THE ZOOLOGICAL SOCIETY OF LONDON WITH ASSISTANCE FROM SOME  
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W. N. EDWARDS, M. HINTON, S. K. MONTGOMERY, J. R. NORMAN, J. B. PROOTER,  
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SUPERINTENDED BY

W. L. SCLATER, M.A., F.L.S. ✓

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Papers and Memoirs intended for this work should be addressed to "THE EDITOR of the Zoological Record, Zoological Society, Regent's Park, London, N.W. 8." It is earnestly requested that in the case of separately-printed copies of papers so forwarded, the *original pagination* may be indicated.



## PREFACE.

THE Annual Volumes of the Zoological Record from XLIII (1906) to LI (1914) inclusive were produced in association with the International Catalogue of Scientific Literature and were identical except in title page with the (N.) Zoology volumes of the Catalogue, 6th to 14th annual issues inclusive. Since then the volumes have been issued on the sole responsibility, financial and editorial, of the Zoological Society, although a gradually decreasing assistance has been given in the shape of card slips compiled by some of the Regional Bureaus of the Catalogue organisation.

The increasing cost of producing the Record has thrown a burden on the finances of the Zoological Society which has seriously interfered with sides of its scientific work more closely related to the study and care of living animals. Last year, the Society explained the position in circulars addressed to the leading institutions in the world interested in zoological science, and announced that it would be unable to continue the publication of the Record unless it was assured that a sufficient number of copies would be subscribed for. The response, unfortunately, was insufficient, and the net loss to the Society on the production and publication of the present volume, so far as can be ascertained, will exceed £1,100. The Council have agreed to assume this responsibility for the present volume, and, in the hope that some means will be found by other institutions interested in the Record, to come to its support, have sanctioned the compilation of the material for the Record dealing with the literature of 1922, but now give formal notice that they will not undertake the publication of that volume or of subsequent issues of the Record unless they receive substantial aid from other institutions. Such aid should be in the form of annual donations to the Zoological Society of London and may be made contingent on the Society receiving, in all, sufficient support to enable it to publish the Record. The Zoological Society is prepared to regard an annual loss of £500 or even £600 as a contribution it may reasonably make to the Record in the general interest of Zoological Science and hopes, therefore, that other institutions will amongst them be able to contribute an equal amount in addition to subscribing for copies. Otherwise, the Zoological Record must cease.

A few minor changes have been introduced in the present issue:—

- (1) Two sections, Arthropoda (General) and Vertebrata (General), have been abolished and such papers as are of a general nature transferred to Comprehensive Zoology or that section to which they appear to be most suitable.
- (2) The subject numbers have been omitted as of little practical use.
- (3) The numbering of the titles under authors has been placed at the commencement of each entry.
- (4) The pagination of each paper is indicated by "pp." instead of brackets.
- (5) The abbreviations of the titles of the journals usually quoted have been rearranged in strict alphabetical order with the place of publication following the title.
- (6) The tables of contents of the subject index have been curtailed in order to reduce the expense of printing.

On the completion of the fifty-seventh volume, DR. SHARP, who had been the responsible editor of the Record for over thirty years, resigned, and his place was taken by MR. W. L. SCLATER. A few months later DR. SHARP died and the Zoological Record Committee and the Council of the Zoological Society desire to put on record their appreciation of the great services rendered to the Record by the late Editor. A short notice of DR. SHARP and a portrait will be found following this.

P. CHALMERS MITCHELL, *Secretary*.

Zoological Society, London.







Yours very truly  
D. Sharp.

## DR. DAVID SHARP, F.R.S.

It would not be fitting that a new volume of the Zoological Record should appear without some notice of the death of the late editor, DR. SHARP, which occurred on 27th August, 1922, at his home at Brockenhurst in the New Forest. His connection with the Record commenced in 1885, when he undertook the preparation of the section on Insecta, and in 1891 he became the responsible editor of the entire work. On the completion of the fifty-seventh volume dealing with the literature for 1920 he resigned the editorship which he had held for thirty years. Such, however, was his enthusiasm for the work that he offered to continue to be responsible for the Insecta, and we believe that he was working on the preparation of the matter for the present volume during the last few days of his life, though he did not live to complete his task.

DR. SHARP was born on 15th October, 1840, at Towcester in Northamptonshire and it was after the removal of his father to London that he came under the influence of Herbert Spencer who was for some time an inmate of his father's house, and there can be no doubt that the keen and logical quality of DR. SHARP's mind was largely due to his early association with that eminent philosopher who gave him much encouragement and assistance in his early studies of Natural History.

Destined by his father for a commercial career, DR. SHARP, not finding it congenial, decided to enter the profession of medicine, and after studying in London and Edinburgh he graduated in 1866 with the degrees of M.B. and C.M. He gave up medical practice in 1884 and was then able to devote his whole time to Entomology. In 1890 he accepted an invitation to undertake the charge of the insect collections of the University Museum of Zoology at Cambridge; he retained this post until 1909 when, having built himself a house at Brockenhurst overlooking one of the most beautiful parts of the New Forest, he retired thither for the remainder of his days.

Most of DR. SHARP's multitudinous writings are systematic works on the Coleoptera to which he devoted the greater part of his life, but more, perhaps, than any other of his contemporaries he had a wonderfully

wide general knowledge of the other orders of insects and of his more general writings the best known are undoubtedly the two volumes on insects in the "Cambridge Natural History" published in 1895 and 1899 which have become standard works and classics.

But perhaps his greatest service to Zoology was his work for the Zoological Record with which he was connected for over forty-five years as Recorder of Insecta and General Editor. He greatly improved the arrangement and the facilities for reference and continued to carry on the work through the period during which the Record and the International Catalogue of Scientific Literature were being carried on as a joint undertaking.

W. L. S.

## EXPLANATORY.

This Volume is printed in the Divisions enumerated on p. viii.

The pagination of each Division is separate, and is given at the left-hand top corner of the pages. The number and name of the Division is given as a heading on each page. The date 1921 corresponding to the bulk of the literature indexed is given at the top of each page.

In the Subject Index of each Division authors are quoted by name only. The full references will be found in the Title Section of the Division.

The Literature indexed is mainly that of 1921 but includes entries for earlier years that have been received too late for inclusion in previous volumes.

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# I. COMPREHENSIVE ZOOLOGY

BY

W. L. SCLATER.

This section includes works that deal with more than one branch of Zoology, or that are of general interest to Zoologists. It is, therefore, not complete in itself as regards any one subject included in it. The special records complete each subject. A few memoirs included in the special records are repeated in this division.

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# II. PROTOZOA

ARRANGED BY

H. M. WOODCOCK, D.Sc.

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†*Virgulina floridana* sp. n. Miocene p. 68 pl. xi fig. 1, CUSHMAN Prof. Papers. U.S. Geol. Surv. 128 B.

#### (c) Heliozoa.

Heliozoa, British, described (by Wailes), CASH & WAILES British freshwater Rhizopoda and Heliozoa Ray Society 1921 vol. v 72 pp. pls. lxiv–lxxiv.

## (d) Radiolaria.

*Styla* nom. nov. for *Stylactis* Ehrbg. praeocc., STECHOW Arch. Naturges. chichte 87 Abth. A H. 3 p. 263.

## 3. SPOROZOA.

## (a) Gregarinidea.

Monocystid Gregarines from earthworms, already briefly diagnosed and named (*vide* Zool. Rec. 55 1918 *Protozoa* p. 19) now fully described, COGNETTI DE MARTIIS Nova Guinea Rés. expéd. sci. néerl. 1912-1913 13 Zool. pp. 501-584 pls. xii-xv.

*Caulleryella pipientis* sp. n. morphology and life-cycle of this Schizogregarine, BUSCHKIEL Zool. Jahrb. Abth. Anat. 43 pp. 97-148 pls. iv & v.

*Cephaloidophora echinogammari* sp. n. note on, POISSON C. R. soc. biol. 84 p. 73.

*Dirhynchocystis* gen. n. (*Monocystidae*) *brasiliensis* sp. n. from *Fimoscolex*, COGNETTI DE MARTIIS Monit. zool. Ital. 31 p. 150 1 text-fig.

*Gregarina anthici* sp. n. note, KAMM J. Parasitol. 7 p. 177 text-fig. 1E & F.—*G. gammari* Dies., probably a *Cephaloidophora*, POISSON C. R. soc. biol. 85 p. 406.—*G. mrazeki* sp. n. from a Lepidopteran, brief diagnosis, MILOJEVIC C. R. soc. biol. 85 p. 91.

*Lankesteria cyclopori* sp. n. occurrence and notes on life-cycle, POISSON C. R. soc. biol. 85 pp. 967-969 10 text-figs.—*L. planariae* Labbé note on, VANDEL C. R. soc. biol. 84 pp. 718 & 719 5 text-figs.

*Monocystis naidis* sp. n., diagnosis, VOSS Arch. Protistenkunde 42 pp. 176-178.

*Nematocystis almae* sp. n. diagnosed, COGNETTI DE MARTIIS Monit. Zool. Ital. 31 p. 153 1 text-fig.

*Selenidium parvum* sp. n. from an undetermined Polychaete, morphology comparison with other species, WOODCOCK & LODGE Rep. "Terra Nova" Antarctic Exped. Zoology 6 p. 5 pl. i figs. 5-12.

*Uradiophora Mercier, longissima* (for *Gregarina* l.) from *Gammarus*, morphology, syzygies, distinctions from

*Didymophyes*, POISSON C. R. soc. biol. 85 pp. 403-406 12 text-figs.—*U. mercieri* for *Frenzelii mercieri* Poisson, POISSON C. R. soc. biol. 84 p. 75.

## (b) Coccidiidea.

*Adelea ovata*, gamete-formation and life-cycle, GREINER Zool. Jahrb. Abth. Anat. 42 pp. 327-362 pls. xvi & xvii.—*A. pachelabrae* sp. n. notes on life-cycle, MELLO C. R. soc. biol. 84 p. 242.

*Coccidium arloingi*, from sheep, notes on life-cycle, LERCHE Arch. Protistenkunde 42 pp. 380-399 pl. xviii.—*C. a.*, from goats, Annam, note on, SCHEIN Bull. soc. path. exot. 14 pp. 380-382.—*C. brumpti* sp. n. from pig, characters and distinction from other forms, CAUCHEMEZ Bull. soc. path. exot. 14 pp. 645-648 1 text-fig.—*C. carpelli* sp. n. occurrence and diagnosis, LÉGER & STANKOVITCH C. R. Acad. sci. 173 pp. 742-744.—*C. cotti* p. 672 text-figs. 1-4, *piraudi* p. 673 figs. 5 & 6, spp. n., from *Cottus gobio*, diagnosed, GAUTHIER C. R. Acad. sci. 173.—*C. cyprinorum* p. 1128 text-figs. 1-3, *cylindrospora* p. 1129 figs. 4 & 5, *soufiae* p. 1130 figs. 6 & 7, spp. n., from Cyprinid fishes, diagnosed, STANKOVITCH C. R. soc. biol. 85.—*C. suis* sp. n. mention only, NÖLLER Arch. Schiffs. Tropenhyg. 25 p. 44.—*C. de bliecki* n. sp. Douwes 1921 is a synonym of above, NÖLLER T.c. p. 45.—*C. zamenis* sp. n. and forms from other serpents, notes on oocysts, PHISALIX Bull. soc. path. exot. 14 pp. 82-84, also in Bull. Mus. 1921 p. 127.

*Eimeria* vide *Coccidium*.

## (c) Haemosporidia.

*Haemogregarina arvalis* (Martoglio), note on schizogony, LAVIER Bull. soc. path. exot. 14 p. 569 text-figs. 1 & 2.—*H. brendae* Samb. and Seligm., from *Psammophis*, note on structure, DELANOË Bull. soc. path. exot. 14 pp. 451-453 1 text-fig.—*H. sp.*, from *Aspidophorus*, morphology of different forms, BELCOUR C. R. soc. biol. 85 pp. 837 & 838.

*Hepatoozon gaelutium* sp. n. note, SERGENT Arch. Inst. Pasteur Afrique Nord 1 p. 56.

*Karyolysus zuluetai* sp. n. mention only, REICHENOW Arch. Protistenkunde 42 p. 220 figs. 33 59 60.



*Laverania malariae*, with references to other forms, phases of development in *Anopheles* bionomics, WENYON Journ. R.A.M.C. 37 pp. 189-192 264-277 352-365 5 pls.—*L. m.* (syn. *Plasmodium falciparum*) notes on atypical forms, VIALATTE Arch. Inst. Past. Afr. Nord 1 pp. 236-239 1 pl.—*L. m.*, 2 types considered to occur, differential diagnosis, CRAIG Amer. J. trop. Med. 1 pp. 57-95 3 pls.; opinion against this view, DARLING T.c. pp. 397-408.

Malarial parasites, different types, morphology contrasted, ACTON, CURJEL & DEWEY Ind. J. Med. Res. 8 pp. 750-773 pls. xlii-xliv.—Malarial parasites, distinctions between, in thick smears, PRATT-JOHNSON J. trop. Med. 24 p. 6.—Malarial parasites, human, occurrence in African apes, notes on morphology, REICHENOW Centralbl. Bakt. Abth. 1 85 Orig. pp. 207-216 1 pl.—Malarial parasites, good figs. of situation of sporozoites in various parts of the Anopheline body, MÜHLENS Arch. Schiffs. Tropenhyg. 25 pp. 58-61 pl. i.

*Nuttallia ninense* (Yak.), from hedgehogs, India, morphology, SINTON Ind. J. Med. Res. 9 pp. 359-363 pls. xxvi & xxvii.

*Piroplasma (Gonderia) mutans*, morphology, SERGENT Ann. Inst. Pasteur 35 pp. 193-203 pl. ii.

*Plasmodium* vide under *Laverania*.

(d) Myxosporidia (including Microsporidia).

*Cocconema* gen. n. (Microsporidia), for certain types with spherical spores, *C. micrococcus*, *polyspora*, *octospora* and *slaviniae* spp. n., from Insect-larvae and Oligochaete, diagnosed, LÉGER & HESSE C. R. Acad. sci. 173 pp. 1419-1421.

*Glugea anomala*, cyst-body with large nuclei derived from host, not parasite, WEISSENBERG Arch. Protistenkunde 42 pp. 400-421 pl. xix.—*G. (cf. hertwigi)* from smelt, notes on, SCHRADER J. Parasitol. 7 pp. 151-153 pl. xiv.

*Myxidium moxostomatis* sp. n. diagnosed, WARD J. Parasitol. 7 p. 172 text-figs. 22-25.

*Nosema baetis* sp. n. spore-formation, KUDO J. Morphology 35 p. 171 pl. v.—*N. cyclopsis* p. 137 text-figs. 1-7, *infirmum* p. 138 figs. 8-17, spp. n., KUDO J. Parasitol. 7.

*Thelohania illinoisensis* sp. n. in *Anopheles punctipennis*, *T. magna* Kudo in *Culex pipiens*, morphology and spore-formation, KUDO J. Morphol. 35 pp. 156-171 pls. i-iv.—*T. opacita* sp. n. from *Culex*-larvae, note, KUDO J. Parasitol. 8 p. 75 1 text-fig.

*Wardia lucii* sp. n. diagnosed, WARD J. Parasitol. 7 p. 166 text-figs. 1-9.

(e) Actinomoxidia.

[Vacant.]

(f) Sarcosporidia.

*Sarcocystis blanchardi* of cattle, dimorphism of spores (male and female ?) in blood, question of transmission by a sanguivorous Insect, SERGENT C. R. soc. biol. 85 pp. 408-411.

Allied to Cnidosporidia:—

*Helicosporidium* gen. n. *parasiticum* sp. n. from *Dasyhelea* (larva) and other Arthropods, life-cycle, KEILIN Parasitol. 13 pp. 97-113 pls. iv-vi.

(g) Haplosporidia.

Haplosporidia from *Herpetocypris strigata*, notes, STEMPPELL Arch. Protistenkunde 42 pp. 307-318 5 text-figs.

*Serumsporidium oviforme* sp. n., STEMPPELL Arch. Protistenkunde 42 p. 312 text-figs. 2 & 3.

*Trachysporidium* gen. n. (Haplosporidia) *mülleri* p. 315 text-fig. 4, *pfeifferi* p. 318 fig. 5, spp. n., STEMPPELL Arch. Protistenkunde 42.

SPOROZOA INCERTAE SEDIS.

(Various and doubtful.)

*Cytamoeba bacterifera*, from the frog, note on, HEGNER J. Parasitol. 7 pp. 157-161 8 text-figs.

Intracellular protozoan parasite, salivary gland of dog, JACKSON J. Inf. diseases 29 pp. 302-305 10 text-figs.



Kurloff-bodies, Negri-bodies, "*Rickettsia*"-bodies and other so-called "Chlamydozoa" are not of an organized nature but are the result of ingestion and alteration (attempted digestion) of red corpuscles or cells, WOODCOCK J. R.A.M.C. 37 pp. 335-341 418-431 2 pls.

*Lymphocystis johnstonei* Woodc., not a parasite but an enormously hypertrophied tissue-cell, WEISSENBERG Arch. mikr. Anat. 94 pp. 55-134 pls. iv-vii.

*Toxoplasma* of dog, schizogony in lung, BOËZ C. R. soc. biol. 85 pp. 1479-1482 1 text-fig.

#### 4. MASTIGOPHORA.

##### (a) Flagellata.

Flagellates, near Geneva, with new forms, morphology and biological notes, PENARD Proc. Acad. nat. sci. Philadelphia 73 pp. 105-168 pls. v-viii.

Flagellates, fresh-water, Australia, with new forms, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

Flagellates from Insects, notes on, PATTON Ind. J. Med. Res. 9 pp. 233-239 pls. xviii & xix.

Flagellates, intestinal from *Microtus arvalis*, notes on structure, LAVIER Bull. soc. path. exot. 14 pp. 710-717 5 text-figs.

A Flagellate, fam. *Tetramitidae* (perhaps a *Tetramitus*) from phagedenic ulcers, morphology, CLAPIER Bull. soc. path. exot. 14 pp. 208-211.

Flagellate, Bodo-like, but belonging to the *Eumonadidae*, from human urine, described, REITLER & ROBICSEK Centralbl. Bakt. Abth. 1 84 Orig. pp. 129-132 1 pl.

*Alphamonas* Alex., syn. *Spiromonas* Perty, WOODCOCK Arch. zool. exp. 60 N. et R. p. 15.

*Anisonema hexagonum* sp. n. p. 142 pl. ix fig. 19 with var. n. *elegans* fig. 20, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

*Archaeobodo bacillivora* gen. n. sp. n. movement, MASSART Bull. Acad. Roy. Belg. 1920 p. 122 text-fig. 6.

*Bicoeca exilis* sp. n., PENARD Proc. Acad. nat. sci. 73 p. 117 pl. v figs. 9-13. (N-17041 e) q

*Carteria excavata* sp. n., MASSART Bull. Acad. Roy. Belg. 1920 p. 134 text-fig. 25.

*Cercobodo primitiva* sp. n. movement, MASSART Bull. Acad. roy. Belg. 1920 p. 119 text-fig. 2.

*Chasmostomum nieuportense* gen. n. sp. n., MASSART T.c. p. 123 text-fig. 7.

*Chilomastix intestinalis* Kuczinski morphology, LEIVA J. Parasitol. 8 pp. 49-57 pl. vi.

*Chloramoeba*, structure of this form, with special reference to the chromatophores, DOFLEIN Acta Zool. 2 pp. 431-443 2 pls.

*Chromulina pyriformis* p. 107 text-fig. 1f, *cuneata* p. 107 fig. 1g, spp. n., PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

*Chrysopsis sphagnum* sp. n., CONRAD Bull. Acad. roy. Belg. 1920 p. 186 text-fig. 11.

*Coccolithophoridae*, oceanic plankton, described, LOHMANN Arch. Biontol. 4 H. 3 pp. 77-136 text-figs. 17-41.

*Colacium elongatum* sp. n. p. 116 pl. iii figs. 4-6, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

"*Critithidia*" *melophagia* shown to be the Insectan phase of the sheep-Trypanosome (*T. melophagium*) confirmation of Woodcock's view and refutation of Porter & Swingle's erroneous view, HOARE Parasitol. 13 p. 67.—"*C. clenoccephali* sp. n. morphology and phases in life-cycle, PATTON & RAO Ind. J. Med. Res. 8 pp. 593-602 pl. xxxiii.

*Cryptobia trematomi* sp. n. morphology, distinction from *Trypanoplasma*, WOODCOCK & LUDGE Rep. "Terra Nova" Antarctic Exped. Zoology 6 p. 2 pl. i figs. 1-4.

*Cryptoglena australis*, *phacoidea*, spp. n., p. 116 pl. v figs. 18 & 19, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

*Cryptomonas ampulla* pl. ii fig. 24, *maxima* fig. 25 p. 114, *gemma* fig. 27, *oblonga* fig. 28 p. 115, spp. n., PLAYFAIR T.c.—*C. caudata* sp. n. movement, MASSART Bull. Acad. Roy. Belg. 1920 p. 120 text-fig. 3.

*Dimastigomoeba vorax* sp. n., MASSART T.c. p. 136 text-fig. 27.

*Dimorpha tetramastix* p. 111 pl. v figs. 4-6, *monomastix* p. 116 figs. 7, 8, spp. n., PENARD Proc. Acad. nat. sci. 73.

*Dinenympha exilis* p. 291 figs. 67, 68, *rugosa* p. 292 figs. 69-72, *nobilis* p. 292 figs. 73-75, *leidyi* p. 292 figs. 76, 77, *parva* p. 294 fig. 78, *porteri* p. 294 figs. 79-82, spp. n., from Japanese Termites, KOIDZUMI Parasitol. 13.

*Diphylleia rotans* gen. n. sp. n., MASSART Bull. Acad. Roy. Belg. 1920 p. 123 text-fig. 8.

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*Eudorina elegans*, cytology and division, biology, HARTMANN Arch. Protistenkunde 43 pp. 223-286 pls. i & ii.

*Euglena guttula* pl. iv fig. 17, with var. n. *elongata* fig. 18, *viuida* fig. 19 p. 122, *pusilla* figs. 20, 21, with var. n. *longa* fig. 22 p. 123, spp. n., *E. viridis* var. n. *purpurea* p. 117, *deses* varr. n. *minuta*, *gracilis* p. 118 pl. iii fig. 15, *oxyuris* var. n. *gracillima* p. 119 pl. iii fig. 19, *spirogyra* var. n. *elegans* p. 120 pl. iv fig. 4, *acutissima* varr. n. *parva*, *hyalina* p. 121 pl. iv figs. 7, 8, *texta* varr. n. *ovata* p. 121 fig. 13, *obesa* fig. 14, *bullata* figs. 15, 16 p. 122, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.—*E. inflata* sp. n., MASSART Bull. Acad. Roy. Belg. 1920 p. 141 text-fig. 29.—*E. pseudomermis* sp. n. p. 158 pl. viii figs. 62, 63, PENARD Proc. Acad. nat. sci. 73.

*Giardia*, this name retained for the genus, which is divided into 2 new subgenera, *G. s. str.* and *Lambia*, REULING & RODENWALDT Arch. Protistenkunde 42 pp. 337-346 2 text-figs.

*Helkesimastix*, note on presence of second (accessory) flagellum, WOODCOCK Arch. zool. exp. 60 N. et R. p. 11.

*Herpetomonas pyrrochoris* Zotta and *Leptomonas davidi* Lafont, notes on, comparison, TEODORO Atti Acad. sci. Padova 11 pp. 22-25.—*H. vide Leptomonas*.

*Heterocapsa quinquespudata* gen. n. sp. n., MASSART Bull. Acad. Roy. Belg. 1920 p. 124 text-fig. 9.

*Histiona campanula* sp. n. morphology, PENARD Proc. Acad. nat. sci. 73 p. 120 pl. vi figs. 14-19.

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*Leishmania donovani* and *tropica*, forms and phases in bed-bug, PATTON, LA FRENAIS & RAO Ind. J. Med. Res. 9 pp. 240-254 pls. xx & xxi.—*L. donovani*, developmental phases in bed-bug, ADIE Ind. J. Med. Res. 9 pp. 255-260 pls. xxii-xxv.

*Lepocinclis cymbiformis* pl. vi figs. 3, 4, *capitata* figs. 5, 6, *costata* figs. 7, 8 p. 128, with var. n. *obesa* p. 129 fig. 9, *paxilliformis* figs. 10, 11, *rugulosa* text-fig. 3, l, m, p. 129, spp. n., *L. ovum* varr. n. *australis*, *costata* p. 126 text-fig. 3b-d, *fusiformis* var. n. *caudata* p. 127 text-fig. 3, j, k, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

*Leptomonas craggii* sp. n. from *Musca bezzii* described, PATTON Ind. J. Med. Res. 9 p. 232 pl. xvii.—*L. myoxi* sp. n. note on morphology, occurrence in organs, etc., LAVERAN & FRANCHINI Bull. Soc. path. exot. 14 pp. 278-280 1 text-fig.—*L. pachelabrae* sp. n. note, MELLO C. R. soc. biol. 84 p. 241.—*L. siphunculinae* sp. n. pp. 613-620 pl. xxxvi, PATTON Ind. J. Med. Res. 8.—*L. pulicis* sp. n. pp. 621-628 pl. xxxvii, PATTON & RAO T.c.—*L. tarentolae* sp. n. from gecko, morphology, cultivation, LAVERAN & FRANCHINI Bull. soc. path. exot. 14 pp. 323-326 1 text-fig.—*L. spp.* from *Chamaeleon*, *Gongylus* and *Tarentola*, intestine, notes, FRANCHINI Bull. soc. path. exot. 14 pp. 641-645.—*Leptomonad* and *leishmanial* phases in bugs of bats, SERGENT & SERGENT C. R. soc. biol. 85 pp. 413-415 1 text-fig.

*Mallomonas australica* sp. n. with varr. n. *gracillima*, *subglobosa* p. 109 pl. ii figs. 5-8, *M. splendens* var. n. *pusilla* p. 108 fig. 4, *M. litomesa* var. n. *curta* p. 109 fig. 10, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

*Mastigamoeba constans* sp. n., MASSART Bull. Acad. Roy. Belg. 1920 p. 125 text-fig. 10.

*Menoidium acutissimum* p. 136 pl. viii fig. 3, *gracile* p. 137 figs. 4 & 5, spp. n., PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

*Microspironympha* gen. n. (*Trichonymphidae*) *porteri* sp. n. from *Leucotermes*, KOIDZUMI Parasitol. 13 p. 268 figs. 32-38.

*Notosolenus pentagonus* sp. n. p. 142 pl. ix fig. 3, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

*Ochromonas aspera*, cylindracea, spp. n., p. 112 pl. i figs. 14-16, PLAYFAIR T.c.

*Oicomonas granulata* sp. n. from man, intestine, YAKIMOFF, SOLOWZOFF & WASSILEWSKY Bull. soc. path. exot. 14 pp. 546-548 text-fig. 5.

*Pararhizomastix* gen. n. *hominis* sp. n. from man [may be a coprozoic form, really] note, YAKIMOFF & KOLPAKOFF Bull. soc. path. exot. 14 p. 553 text-fig. 4.

*Peranema cuneatum* pl. ix figs. 7-9, *asperum* fig. 14 p. 141, spp. n., PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

*Petalomona coxydensis* sp. n., MASSART Bull. Acad. Roy. Belg. 1920 p. 127 text-fig. 14B-D.

*Phacus inflatus* p. 124 pl. v figs. 12, 13, *lismorensis* p. 125 fig. 14, spp. n., *P. pleuronectes* varr. n. *minutus*, *australis* p. 123 figs. 2, 3, *pyrum* varr. n. *ovatus* fig. 15, *australicus* fig. 16, *rudicula* fig. 17 p. 125, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

*Piromonas rossica* sp. n. from rabbit, YAKIMOFF, WASSILEWSKY, KORNILOFF & ZWIETKOFF Bull. soc. path. exot. 14 p. 563.

*Pleuromonas jaculans* Perty, from caecal contents of chicken, morphology, URIBE J. Parasitol. 8 pp. 58-65 pl. vii.

*Podomastix* gen. n. *fabacea* sp. n. organellae of locomotion, MASSART Bull. Acad. roy. Belg. 1920 p. 119 text-fig. 1.

*Prismatomonas* gen. n. *limax* sp. n. movement [this type looks to the Rec. very like *Helkesimastix* of which it is probably a synonym], MASSART T.c. p. 125 text-fig. 11.

*Prymnesium* gen. n. *saltans* sp. n., MASSART T.c. p. 133 text-fig. 24.

*Pseudotrichonympha grassii* sp. n. occurrence and morphology, KOIDZUMI Parasitol. 13 p. 255 figs. 14-23.—*P. pristina*, correct name for *Trichonympha* (*Holomastigotoides*) p., Imms, morphology, cytology described, CUTLER Quart. J. Micr. Sci. 65 pp. 247-264 pl. x.

(N-17041 e) q

*Pyrsonympha grandis* p. 281 figs. 54-64. *modesta* p. 289 figs. 65 & 66, spp. n., KOIDZUMI Parasitol. 13.

*Reckertia* gen. n. (near *Thaumatomastix*) *sagittifera* sp. n. a new flagellate possessing trichocysts, CONRAD Bull. Acad. roy. Belg. 1920 pp. 541-555 4 text-figs.

*Rhynchoidomonas siphunculinae* sp. n. morphology and phases in life-cycle, PATTON Ind. J. Med. Res. 8 pp. 603-612 pls. xxxiv & xxxv.

*Salpingoeca ampullacea* var. n. *cordata* p. 101 pl. i fig. 5, *amphoridium* var. n. *australis* p. 102 fig. 6, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.—*S. polygonatum* p. 123 pl. vi figs. 20-28, *lepidula* p. 127 figs. 29-40, spp. n., PENARD Proc. Acad. nat. sci. 73.

*Schizotrypanum pipistrelli* sp. n. phases of life-cycle, CHATTON & COURRIER C. R. soc. biol. 84 pp. 943-946 3 text-figs.

*Scintilla* gen. n. *Scintillaceae*), *chlorina*, *splendida* spp. n., p. 110 pl. ii figs. 12-15, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

*Scytomonas marina* sp. n., MASSART Bull. Acad. Roy. Belg. 1920 p. 127 text-fig. 15.

*Sphaeromonas rossica* sp. n. from guinea-pig, intestine, note, YAKIMOFF, WASSILEWSKY, KORNILOFF & ZWIETKOFF Bull. soc. path. exot. 14 p. 559.

*Sphenomonas australis* p. 138 pl. viii fig. 11, with varr. n. *elliptica*, *rhomboidea* p. 138 figs. 12 & 13, *triquetra* p. 139 fig. 20, with var. n. *cuneata* fig. 19, *excavata* p. 139 pl. ix. fig. 1, *spiralis* p. 140 fig. 2, with var. n. *angusta* fig. 3, *mirabilis* p. 140 figs. 4 & 5, spp. n., *S. teres* var. n. *pyriformis* p. 139 pl. viii figs. 16 & 17, *quadrangularis* var. n. *cruciformis* p. 138 fig. 10, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

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*Syracosphaera atlantica* sp. n., BUSCH Arch. Naturgesch. 85 Abth. A. H. 8 p. 51 2 text-figs.

*Teratonympha* gen. n. (*Trichonymphidae*) *mirabilis* sp. n. with var. n. *formosana* from *Leucotermes*, KOIDZUMI Parasitol. 13 p. 261 figs. 26-31.

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*Thallochrysis* gen. n. (*Chrysomondina*) *pascheri* sp. n. described, CONRAD Bull. Acad. roy. Belg. 1920 p. 180 text-figs. 8-10.

*Trachelomonas coronata* p. 132 pl. vi figs. 29 & 30, *splendida* p. 132 pl. vii fig. 1, *paucispinosa* p. 133 fig. 6, *hesperia* p. 134 figs. 7, 11, *cuneata* p. 135 fig. 15, *lanceolata* p. 136 figs. 19, 20, *spiralis* p. 136 fig. 21, spp. n., *T. volvocina* varr. n. *planktonica* p. 129 pl. vi fig. 12, *scabra* p. 129 fig. 13, *coronetta* fig. 14, *pustulosa* fig. 15 p. 130, *botanica* var. n. *borealis* p. 130 fig. 16, *volzii* var. n. *sulcata* p. 131 fig. 23, *ampulla* varr. n. *gracilis* fig. 25, *elliptica* fig. 26 p. 131, *eurystoma* var. n. *parva* p. 131 fig. 28, *napiformis* var. n. *brevicollis* p. 135 pl. vii figs. 12-14, *gibberosa* varr. n. *longicollis* fig. 16, *tumida* fig. 17 p. 135, PLAYFAIR Proc. Linn. Soc. N.S.W. 46.

*Trichomonas vaginalis* Donné notes on morphology, REULING Arch. Protistenkunde 42 pp. 347-363 pl. xv.

*Trichonympha agilis* var. *japonica* p. 247 figs. 1-4, var. *formosana* p. 252 figs. 5-12, varr. nn., in Japanese Termites, KOIDZUMI Parasitol. 13.

*Trichonymphidae* from Japanese Termites, full account, KOIDZUMI T.c. pp. 235-309 pls. x-xv.

*Trypanosoma bocagei* França, from *Bufo mauritanicus*, morphology, LEBAILLY & CAILLON Arch. Inst Pasteur Tunis 11 pp. 28-30 1 pl.—*T. ninakohl-yakimovi* sp. n. name given to a camel-Trypanosome, Russian Turkestan, YAKIMOFF Bull. soc. path. exot. 14 p. 640.—*T. ruandae* sp. n. from cattle morphology, comparison with other forms, VAN SACEGHEM C. R. soc. biol. 84 pp. 283-286.—*T. talpae* Nabarro, note on morphology, DELANOË Bull. soc. path. exot. 14 pp. 453-455 1 text-fig.—*T.* spp. of types *dimorphon-congolense* and *brucei-pecaudi*, from cattle and horses, Italian Somaliland, morphology, *T. somalilense* and *cellii*, Martoglio, regarded as only mixed infections of above types, DONIZIO Bull. soc. path. exot. 14 pp. 423-433 2 text-figs.—*T.* sp. from *Vesperugo*, notes on different forms, stages in *Leiognathus*, FRANCHINI Bull. soc. path. exot. 14 pp. 542-546 2 text-figs.

Trypanosomes mammalian of Africa, polymorphic forms, question of species and strains in relation to biological considerations, DUKE Parasitol. 13 pp. 352-397.—A Trypanosome of *Schizotrypanum*-type, from *Vesperugo*, various phases described, CHATTON & COURRIER C. R. Acad. sci. 172 pp. 1254-1257.

## (b) Silicoflagellata.

[Vacant.]

## (c) Dinoflagellata

Dinoflagellates free-living, unarmoured, monographic account, KOFOID & SWEZY Mem. Univ. Calif. 5 1921 pp. 1-562 pls. i-xii and 388 text-figs.

Peridinida, fresh-water, variation-forms and new forms, LINDEMANN Arch. Naturgesch. 84 Abth. A. H. 8 pp. 121-194 200 text-figs.

Peridinida, from oceanic plankton, LOHMANN Arch. Biontol. 4 H. 3 pp. 137-172 text-figs. 42-46.

*Achradina reticulata*, *angusta* and *sulcata*, spp. n., LOHMANN Arch. Biontol. 4 H. 3 pp. 138 & 139 text-fig. 42.

*Amphidinium* (with subgen. n. *A.* and *Rotundinium* p. 131) *asymmetricum* p. 133 fig. 1, *corpulentum* p. 134 fig. 11, *cucurbita* p. 136 fig. 9, *cucurbitella* p. 137 fig. 6, *dentatum* p. 138 fig. 111, *fastigium* p. 140 fig. 18, *galbanum* p. 141 fig. 4, *herdmanni* p. 143 text-fig. U2, *klebsi* p. 144 text-fig. U14, *pacificum* p. 149 fig. 13, *scissum* p. 150 fig. 22, *truncatum* p. 154 text-fig. U3, *turbo* p. 155 fig. 98, *vasculum* p. 156 text-fig. U27, spp. n., KOFOID & SWEZY Mem. Univ. Calif. 5.—*A. herdmanni*, *asymmetricum* and *sulcatum* Kofoid, from Port Erin, notes, HERDMAN Proc. Trans. Liverpool Biol. Soc. 35 p. 61 (see also p. 40).

*Ceratum furca*, note on, HARRIS Nature 108 p. 42.—The form regarded by him as *C. f.* really a variety of *C. hirundinella*, HARRIS T.c. p. 340.

*Chilodinium cruciatum* gen. n. sp. n., MASSART Bull. Acad. Roy. Belg. 1920 p. 126 text-fig. 12.

*Cochlodinium* (with subgen. n. *C.*, *Glyphodinium* and *Polydinium* p. 349), *atromaculatum* p. 352 fig. 71, *augustum* p. 354 fig. 53, *cavatum* p. 356 fig. 93,



*cereum* p. 357 text-fig. GG5, *citron* p. 358 fig. 79, *clarissimum* p. 359 fig. 60, *conspiratum* p. 361 fig. 29, *convolutum* p. 363 fig. 115, *distortum* p. 364 fig. 78, *elongatum* p. 366 fig. 45, *faurei* p. 366 fig. 25, *lebourae* p. 371 fig. 23, *miniaturum* p. 372 fig. 107, *radiatum* p. 377 fig. 67, *rosaceum* p. 379 fig. 85, *schuetti* p. 380 fig. 8, *scintillans* p. 381 fig. 113, *turbineum* p. 383 fig. 99, *vincitum* p. 384 fig. 15, *virescens* p. 386 fig. 104, *volutum* p. 387 fig. 108, spp. n., KOFOID & SWEZY Mem. Univ. Calif. 5.

*Erythropsis* (with *Polyopsidella* subgen. n. p. 487), *extrudens* p. 494 fig. 130, *hispida* p. 499 fig. 127, *labrum* p. 501 fig. 132, *minor* p. 503 fig. 131, *pavillardi* p. 505 fig. 133, *richardi* p. 508 fig. 134, *scarlatina* p. 510 fig. 128, spp. n., KOFOID & SWEZY T.c.

*Glenodinium marinum* sp. n., MAS-SART Bull. Acad. Roy. Belg. 1920 p. 133 text-fig. 23.

*Gymnodinium* (with subgen. n. *G.* p. 174, *Lineadinium* and *Pachydinium* p. 175) *abbreviatum* p. 180 fig. 63, *agile* p. 184 fig. 31, *amphora* p. 185 fig. 26, *attenuatum* p. 186 text-fig. V12, *auratum* p. 187 fig. 20, *aureum* p. 188 fig. 5, *bicorne* p. 191 fig. 14, *bifurcatum* p. 192 text-fig. AA 2 & 3, *canus* p. 194 fig. 41, *cinctum* p. 196 fig. 75, *conicum* p. 198 text-fig. X27, *contractum* p. 199 fig. 52, *costatum* p. 200 fig. 33, *dissimile* p. 204 fig. 35, *dogieli* p. 205 fig. 34, *doma* p. 206 fig. 57, *flavum* p. 208 fig. 100, *fulgens* p. 209 text-fig. X30, *hamulus* p. 218 fig. 97, *heterostriatum* p. 221 figs. 24 & 56, *incisum* p. 223 fig. 27, *lineatum* p. 225 fig. 2, *lineopunicum* p. 226 fig. 65, *lira* p. 227 fig. 30, *multilineatum* p. 235 fig. 59, *multistriatum* p. 236 fig. 37, *ovulum* p. 238 fig. 58, *pachydermatum* p. 239 fig. 32, *punicum* p. 245 fig. 51, *radiatum* p. 246 text-fig. Z9, *ravenescens* p. 247 fig. 10, *rubricauda* p. 251 fig. 88, *rubrum* p. 253 fig. 86, *scopulosum* p. 255 fig. 7, *situla* p. 257 fig. 12, *sulcatum* p. 259 fig. 83, *translucens* p. 262 fig. 17, *violescens* p. 267 fig. 69, spp. n., KOFOID & SWEZY Mem. Univ. Calif. 5.—*G. asymmetricum* sp. n., MASSART Bull. Acad. Roy. Belg. 1920 p. 133 text-fig. 22.—*G. pseudonociluca* Pouchet, morphology described, *G. lebourii* nom. nov. comparison, PAVILLARD C. R. Acad. sci. 172 pp. 868–870 6 text-figs.

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*Heterocapsa triquetra* var. n. *litorale*, LINDEMANN Arch. Naturgesch. 84 Abth. A. H. 8 p. 182 text-fig. 200.

*Nematodinium* gen. n. (*Pouchetiidae* fam. n.) *partitum* p. 425 fig. 68, *torpedo* p. 426 fig. 124, spp. n., KOFOID & SWEZY Mem. Univ. Calif. 5.

*Noctilucidae*, placed here by KOFOID & SWEZY T.c. (vide under *Rhynchoflagellata*).

*Oxyrrhis marina* Duj., account of nuclear division, infection with a parasite, DUNKERLY Proc. R. phys. Soc. Edinburgh 20 pp. 217–220 7 text-figs.

*Peridinium linzium* p. 137 text-figs. 40–43, *pygmaeum* p. 145 figs. 77–80, *eximium* p. 167 figs. 163–166 and with var. n. *mutatum* p. 168 fig. 167, *semicirculatum* p. 168 figs. 168–171, *scallense* and with subvar. n. *originale* p. 170 figs. 175–177, spp. n., *P. elpatievskyi* f. n. *brigantium* p. 128 fig. 17, *bipes* var. n. *occulatum* p. 132 fig. 35 and f. n. *globosum* pl. 132 figs. 28–31, *lubiniense* var. n. *contactum* p. 137 figs. 48–50, *inconspicuum* f. *marichicum* nom. nov. p. 142, *munusculum* f. n. *spiniferum* p. 143 figs. 71–74, *willie* ff. n. *sphaericum* p. 151 figs. 81–83, *stagnale* p. 151 figs. 84 & 85, *questrowiense* var. n. *cyclicum* p. 156 figs. 123 & 124 and subvar. n. *originale* p. 158 fig. 133, *cinctum* ff. n. *angulatum* p. 163 figs. 143–150, *ovoplanum* p. 164 figs. 151–155, and varr.

*n. laesum* p. 165 figs. 156 & 157, *dis-simile* p. 166 figs. 158 & 159, *curvatum* p. 167 figs. 160-162, also subvar. *n. originale* p. 170 fig. 174, *elpatiewskyi* var. *n. β δ-bitraversectum* p. 178 fig. 183, *laeve* subsp. *marssoni* var. *n. δ-col-lineatum* p. 179 fig. 187, *wierzejski* var. *δ-traversectum* nom. nov. p. 179 fig. 189, *guestrowiense* var. *n. β-collineatum* p. 179 fig. 190, *cinctum* varr. *n. β-col-lineatum* p. 180 fig. 191, *ε-collineatum* p. 180 fig. 192, *δ-traversectum* p. 180 fig. 194, *ε-traversectum* p. 181 fig. 196, LINDEMANN Arch. Naturgesch. 84 Abth. A. H. 8.

*Pouchetia* (with subgen. *n. P.* and *Pouchetiella* p. 436) *alba* p. 438 fig. 121, *atra* p. 439 fig. 126, *maculata* p. 446 fig. 119, *maxima* p. 448 fig. 61, *poucheti* p. 455 fig. 125, *purpurata* p. 457 fig. 87, *purpurescens* p. 458 fig. 84, *rubescens* p. 463 fig. 90, *schuetti* p. 465, text-figs. PP10 & 11, *striata* p. 467 text-fig. 008, *subnigra* p. 468 fig. 66, *violescens* p. 469 figs. 118 & 120, *voracis* p. 471 fig. 89, spp. *n.*, KOFOID & SWEZY Mem. Univ. Calif. 5.

*Prorocentrum stylifer, tenue, curvatum*, spp. *n.*, LOHMANN Arch. Biontol. 4 H. 3 p. 156 text-fig. 46.

*Proterothropsis* gen. *n.* (*Pouchetiidae*) p. 474, *crassicaudata* p. 475 fig. 123, sp. *n.*, KOFOID & SWEZY Mem. Univ. Calif. 5.

*Protodinifer* gen. *n.* (*Protodiniferidae* fam. *n.*) *tentaculatum* sp. *n.*, KOFOID & SWEZY T.c. p. 112 fig. 74.

*Protopsis* gen. *n.* (*Pouchetiidae*) p. 415, *neapolitana* sp. *n.* Kof. p. 416 fig. 96, KOFOID & SWEZY T.c.

*Torodinium* gen. *n.* (*Gymnodiniidae*) *robustum* sp. *n.* p. 391 fig. 49, *teredo* (*Pouchet*) p. 393 text-fig. 114, KOFOID & SWEZY T.c.

#### (d) Rhynchoflagellata.

*Noctiluca miliaris* Suriray, general account of morphology, reproduction, physiology, from living observations, PRATJE Arch. Protistenkunde 42 pp. 1-98 pls. i-v.

*Pavillardia* gen. *n.* (*Noctilucidae*) *tentaculifera* sp. *n.* p. 404 fig. 114, KOFOID & SWEZY Mem. Univ. Calif. 5.

#### 5. CILIOPHORA (INFUSORIA).

##### (a) Ciliata.

Infusoria, neighbourhood of Geneva, new forms, PENARD Georg. & Cie. 1921 331 pp. 301 text-figs.

Infusoria, environs Calcutta, notes, GHOSH Bull. Carmichael Med. Coll. 2 pp. 6-17 1 pl.

*Amphileptus utriculariae* sp. *n.* p. 64 fig. 67, PENARD Georg. & Cie. 1921.

*Anoplophrya elongata, variabilis*, spp. *n.*, from freshwater Gastropods, GHOSH Bull. Carmichael Med. Coll. 2 p. 6 figs. 1 & 2.

*Aspidisca marsupialis* sp. *n.* p. 241 fig. 231, PENARD Georg. et Cie. 1921.

*Balantidiopsis* gen. *n.* *musculicola* sp. *n.* p. 15 figs. 7 & 8, PENARD T.c.—*B. depressum* sp. *n.* from *Ampullaria*, GHOSH Bull. Carmichael Med. Coll. 2 p. 13 fig. 12.

*Balantidium ranarum* sp. *n.* from *Rana tigrina*, GHOSH T.c. p. 14.—*B. luciencis* sp. *n.* from *Orchestia*, note, POISSON C. R. soc. biol. 84 pp. 333-335 3 text-figs.

*Balantiophorus chaetophorae* p. 126 fig. 128, *musculicola* p. 127 fig. 129, spp. *n.*, PENARD Georg. et Cie. 1921.

*Balladina viridis* sp. *n.* p. 240 fig. 229, PENARD T.c.

*Balladinopsis* gen. *n.* (*Hypotricha* near *Balladina*) *nuda* sp. *n.* Calcutta, diagnosed, GHOSH Journ. Roy. Microsc. Soc. 1921 p. 248 text-fig. 1.

*Buehringia* gen. *n.* (syst. position doubtful, perhaps near *Strombidium*) *atlantica* sp. *n.*, BUSCH Arch. Protistenkunde 42 p. 376 pl. xvii.

*Bursella* gen. *n.* (*Holotricha*, fam. *n.* *Gastruloidae*), *spumosa* sp. *n.* description, SCHMIDT Arch. mikr. Anat. 95 Abth. 1 pp. 1-36 pls. i-iv.

*Bütschliella chaetogastri* p. 9 fig. 1, *nymphearum* p. 10 fig. 2, spp. *n.*, PENARD Georg. et Cie. 1921.

*Carchesium corymbosum* sp. *n.* p. 260 figs. 246 & 247, PENARD T.c.

*Chilodon capucinus* p. 92 fig. 96,  
*turgidulus* fig. 98, *granulatus* fig. 99  
p. 94, *geographicus* p. 95 fig. 100, spp. n.,  
PENARD T.C.

*Chlamyodontopsis bengalensis* sp. n.,  
GHOSH Bull. Carmichael Med. Coll. 2  
p. 8 fig. 4.

*Clathrostoma* gen. n. *viminale* sp. n.  
p. 143 figs. 141, 142, PENARD Georg et  
Cie. 1921.

*Condyllostoma tardum* p. 202 fig. 201,  
*sphagni* p. 204 fig. 202, spp. n., PENARD  
T.C.

*Cothurnia ceratophylli* p. 291 fig. 275,  
*laponum* p. 293 fig. 279, spp. n.,  
PENARD T.C.

*Cranotheridium elongatum* fig. 32,  
*ariadnae* fig. 33 p. 33, spp. n., PENARD  
T.C.

*Cristigera phoenix* fig. 177, *minor* fig.  
178 p. 179, *fusiformis* p. 180 fig. 179,  
spp. n., PENARD T.C.

*Cyclidium lanuginosum* p. 182 fig.  
182, *versatile* p. 183 fig. 183, spp. n.,  
PENARD T.C.

*Didinium armatum* sp. n. p. 58 fig. 61,  
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*Dileptus tenuis* p. 79 fig. 84, *mucro-*  
*natus* p. 80 fig. 85, spp. n., PENARD T.C.

*Drepanomonas obtusa* fig. 166, *exigua*  
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*Enchelys diffugiatarum* sp. n. p. 21  
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*Epalxis antiquorum* p. 160 fig. 156,  
*mimetica* p. 161 fig. 157, *elliptica* fig.  
158, *exigua* fig. 159 p. 162, *discoidea*  
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*flagellata* p. 164 fig. 162, *anatina* p. 165  
fig. 163, spp. n., PENARD T.C.

*Epistylis racemosa* sp. n. p. 263 fig.  
249, PENARD T.C.

*Euploia* gen. n. (Hypotricha) *pelagica*  
sp. n. oceanic plankton, LOHMANN  
Arch. Biontol. 4 H. 3 p. 222 fig. 64.

*Euploes terricola* sp. n. p. 240 fig.  
230, PENARD Georg. et Cie. 1921.

*Folliculina* taxonomic notes, AN-  
DREWS Amer. Nat. 55 pp. 347-367.

*Frononia parvula* p. 141 fig. 139,  
*nigricans* p. 142 fig. 140, spp. n.,  
PENARD Georg. et Cie. 1921.

*Gerda ambigua* sp. n. p. 248 fig. 236,  
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*Glaucoma rubescens* p. 119 fig. 120,  
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126, *sphagni* p. 126 fig. 127, spp. n.,  
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*Haematophagus* gen. n. (Stentoridae),  
*megapterae* sp. n. occurrence, morpho-  
logy, stages in life-history and biology,  
WOODCOCK & LODGE Rep. "Terra  
Nova" Antarctic Exped. Zoology 6  
pp. 7-22 pls. i-iii figs. 13-65.

*Holophrya pelagica* sp. n., LOHMANN  
Arch. Biontol. 4 H. 3 p. 226 fig. 66.—  
*H. saginata* p. 13 fig. 4, *sulcata* p. 14 fig.  
5, *barbatula* p. 15 fig. 6, spp. n., PENARD  
Georg. et Cie. 1921.

*Ileonema simplex* sp. n. p. 54 fig. 57,  
PENARD T.C.

*Keronopsis* gen. n., *helluo* sp. n.  
p. 238 fig. 228, PENARD T.C.

*Lacrymaria vorax* p. 44 fig. 45,  
*cucumis* p. 46 fig. 47, *trilineata* p. 47  
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*Lambornella* gen. n. (Holotricha)  
*stegomyiae* sp. n. morphology and cysts,  
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spp. n., PENARD Georg. et Cie. 1921.

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*patiens* p. 66 fig. 71, *triqueter* p. 67  
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69 fig. 75, *armillatus* p. 71 fig. 76,  
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GHOSH Bull. Carmichael Med. Coll. 2  
p. 8 fig. 3.



*Lophophorina* gen. n. (compared with *Chilodon*) *capronata* sp. n. p. 96 fig. 101, PENARD Georg. et Cie. 1921.

*Loxophyllum gammari* sp. n. p. 75 fig. 80, PENARD T.c.

*Ludio* gen. n. *parvulus* sp. n. p. 213 fig. 208, PENARD T.c.

*Metacystis lagenula* p. 226 fig. 219, *recurva* p. 228 fig. 220, *daphnicola* p. 230 fig. 221, *exigua* p. 231 fig. 222, spp. n., PENARD T.c.

*Metopus vexilliger* fig. 194, *caudatus* fig. 195 p. 196, *contractus* p. 197 fig. 196, *cuspidatus* p. 198 fig. 197, spp. n., PENARD T.c.

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*Monochilum tessellatum* sp. n. p. 118 fig. 119, PENARD T.c.

*Nassula protectissima* p. 88 fig. 91, *sorex* fig. 92, *pseudonassula* fig. 93 p. 89, spp. n., PENARD T.c.

*Nicollellidae* account of the Ciliates comprising this family, parasitic in gondi, etc., structure, life-cycle, affinities, CHATTON & PÉARD Bull. biol. France Belg. 55 pp. 87-151 pls. i-iii.

*Nyctotherus kempi* sp. n. from *Amphullaria*, GHOSH Bull. Carmichael Med. Coll. 2 p. 10 fig. 11.

*Opercularia corethrae* p. 272 text-fig. 4, *zschokkei* p. 274 fig. 5, spp. n., KEISER Rev. Suisse Zool. 28.—*O. protecta* sp. n. p. 269 fig. 256, PENARD Georg. et Cie. 1921.

*Ophrydiopsis* gen. n. *concava* sp. n. p. 278 fig. 263, PENARD T.c.

*Ophrydium boreale* p. 283 fig. 266, *crassicaule* p. 284 fig. 267, spp. n., PENARD T.c.

*Ophryoglena tigrina* fig. 144, *maligna* fig. 145 p. 149, *viridis* p. 151 fig. 146, *impatiens* p. 152 fig. 147, spp. n., PENARD T.c.—*O. collini* sp. n. from body-cavity, Ephemerid larvae, LICHTENSTEIN C. R. soc. biol. 85 pp. 794-796 1 text-fig.

*Orthodon banerjeei* sp. n., GHOSH Bull. Carmichael Med. Coll. 2 p. 8 fig. 5.

*Parabursaria* gen. n. (*Bursariidae*) *pheretima* sp. n. occurrence and diagnosis, GHOSH T.c. p. 12 fig. 10.

*Paramoecium calkinsi* sp. n. morphology and inter-genetic relations, WOODRUFF Biol. Bull. 41 pp. 171-180 7 text-figs; also in Proc. Soc. exp. Biol. 18 p. 138.

*Prorodon robustus* p. 39 fig. 40, *abietum* p. 40 fig. 41, *cinereus* p. 40 fig. 42, spp. n., PENARD Georg. et Cie. 1921.

*Protoopalina* gen. n. *primordialis* (Powers), distinctions from *Opalina*, phylogenetic considerations, METCALF J. Washington Acad. Sci. 8 pp. 427-431.

*Pyxidium aselli* p. 274 fig. 260, *curvicaule* p. 276 fig. 261, *canthocampti* p. 277 fig. 262, spp. n., PENARD Georg. et Cie. 1921.

*Rhabdostyla lumbriculi* p. 266 fig. 251, *sessilis* p. 267 fig. 252, *porculus* p. 269 fig. 255, spp. n., PENARD T.c.

*Spathidium viride* p. 25 fig. 19, *cultriforme* p. 25 fig. 20, *vermiforme* p. 26 fig. 21, *cithara* fig. 22, *labeo* fig. 23, *repandum* fig. 24 p. 27, spp. n., PENARD T.c.

*Stegochilum ovale* sp. n., GHOSH Bull. Carmichael Med. Coll. 2 p. 9 fig. 7.

*Stentor viridis* sp. n., GHOSH T.c. p. 15 fig. 9.

*Strombidium* spp. from Pentland Firth and Black Sea, notes p. 365 pl. xvi, *S. buehringae* sp. n. p. 373 text-figs. K & L, BUSCH Arch. Protistenkunde 42.

*Strombilidium humile* sp. n. p. 218 fig. 212, PENARD Georg. et Cie. 1921.

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*Trachelius subtilis* sp. n. p. 83 fig. 87, PENARD T.c.

*Trachelophyllum falciforme* fig. 54, *pilosum* fig. 55 p. 52, *fontinale* p. 53 fig. 56, spp. n., PENARD T.c.

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*Vorticella dipneumon* p. 253 fig. 240, *muralis* p. 254 fig. 241, *claudicans* p. 257 fig. 243, *chlamydophora* fig. 244, *mutans* fig. 245 p. 259, *spp. n.*, PENARD T.c.—*V. microstoma* var. *n. abbreviata*, KEISER Rev. Suisse Zool. 28 p. 239 text-fig. 1.

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*Hypocoma patellarum* sp. n. parasitic on gills of *Patella*, morphology, LICH-  
TENSTEIN C. R. soc. biol. 85 pp. 796-  
799 7 text-figs.

*Sphenophrya* gen. n. (*Sphenophryidae*  
fam. n.) *dosinia* sp. n. forms in close  
attachment to gills of *Acephala*,  
morphology, CHATTON & LWOFF C. R.  
Acad. sci. 173 pp. 1495-1497 5 text-figs.

## PROTOZOA INCERTAE SEDIS.

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parison with *Haemoflagellates*, STAUF-  
FACHER Zs. wiss. Zool. 118 pp. 511-  
636 pls. xii & xiii.



# III. PORIFERA OR SPONGIDA

ARRANGED BY

H. M. WOODCOCK, D.Sc. (LOND.).

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# IV. COELENTERATA

ARRANGED BY

A. KNYVETT TOTTON.

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# V. ECHINODERMA

ARRANGED BY

II. B. PRESTON.

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†*Strongylocentrotus*, BELL 7.

†*Temnechinus*, BELL 7.

*Temnopleuridae*, CLARK 23.

†*Thomasaster* gen. n. (Type *T. araidensis* Gauthier (*Archiacia*)), LAMBERT Mem. Soc. Acad. Aube 83 & 84 pp. 155 167.

†*Tiaria*, FOURTAU 53.

†*Toxaster*, LAMBERT 77.

*Toxobrius* discussed, MORTENSEN 92a p. 166.

†*Trachyspatagus lamberti* sp. n. Miocene, CECCHIA-RISPOLI Boll. Soc. Geol. Ital. 39 pp. 171-176.

†*Trematopygus*, DÉMOLY 44.—*T.*, FOURTAU 53.

*Tretocidaris annulata* syn. of *T. bartletti*, MORTENSEN 92a p. 169.

*Tripylaster* subg. n. ad *Schizaster*, type *S. philippii*, MORTENSEN 92a p. 122.

†*Trochodiadema*, FOURTAU 53.

†*Trochotiara* with *T. guebhardi* [? sp. n.] Lower Cretaceous France, LAMBERT Notes Provençales 11 p. 2 pl. ii fig. 1.—*T.*, DÉMOLY 44.

†*Tylocidaris* with *T. mengaudi* [? sp. n.] Campanien Spain, LAMBERT Ann. soc. linn. Lyon 66 pp. 2-4 pl. i figs. 5 9.

†*Typocidaris*, FOURTAU 53.—*T.*, LAMBERT 77 & 79.

*Urechinus naresianus* p. 39, *U. giganteus* p. 45, MORTENSEN 92a.

†*Vasconaster*, nom. nov. [sic = Lambert 1915] pro *Surcella* [sic = *Sarsella*] Pomel non Haecckel, LAMBERT Rev. crit. paléozoöl 24 p. 174.

†*Victoriaster*, LAMBERT 80.

†*Vologesia*, CURRIE 40.—*V.*, LAMBERT 80.

†*Vomeraster*, LAMBERT 80.

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*Acanthasteridae*, CLARK 23.

*Acodontaster*, KÖHLER 73.

*Anasterias* with *A. victoriae*, *adeliae* spp. n. Antarctic, KÖHLER Aust. Ant. Exp. 1911-14 Sci. Rep. Zool. Bot. 8 pp. 11-30 pls. i figs. 1 2 & 5-10; ii fig. 5; iii figs. 1-6; iv figs. 1-4; v figs. 1-10; vi figs. 1-4; lvi fig. 1; lvii fig. 1.

*Asterias rubens*, HINARD & FILLON 69.—*A. groenlandica*, LIEBERKIND 85.—*A.*, CHAMBERS & MOSSOP 17.—*A.*, CLARK 21.

†*Asterias*, BELL 7.

*Asterina* with *A. anomala*, *nuda* spp. n. Torres Straits, CLARK Dept. Mar. Biol. Carnegie Inst. 10 pp. 95 98 pls. xxvi figs. 2 3; xxiii figs. 3-5; vii fig. 8.—*A. hamiltoni* sp. n. Antarctic, KÖHLER Aust. Ant. Exp. 1911-14 Sci. Rep. Zool. Bot. 8 pp. 133-136 pls. xxxv figs. 5-8; xxxvi figs 1 2 3; lxvi fig. 5.

*Asterioidea*, CLARK & WHEELER 34.—*A.*, KÖHLER 75.

*Asteropidae*, CLARK 23.

*Astropectinidae*, CLARK 23.

*Austrofromia* gen. n., CLARK Dept. Mar. Biol. Carnegie Inst. 10 p. 48.

*Autasterias*, KÖHLER 73.

*Bathybiaster*, KÖHLER 73.



*Bunaster* with *B. uniserialis* sp. n. Torres Straits, CLARK Dept. Mar. Biol. Carnegie Inst. 10 p. 69 pls. xxxvi figs. 5-7; vii fig. 2.

*Certonardou* gen. n., CLARK Dept. Mar. Biol. Carnegie Inst. 10 p. 56.

†*Comptonia*, ADKINS & WINTON 1.—C., FOURTAU 53.

*Cribrella*, KÖHLER 73.

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*Echinaster smilar, hirsutus, pterasteroides* spp. n. Antarctic, KÖHLER Aust. Ant. Exp. 1911-14 Sci. Rep. Zool. Bot. 8 pp. 111-118 pls. xii fig. 10; xxv figs. 1 2 6 7; lxvi fig. 1; xii fig. 9; xxiv figs. 6-9; lxvi fig. 2; xvi figs 4 5 8; xxv figs. 3 4 5.

*Echinasteridae*, CLARK 23.

*Epidontaster* gen. n. with *E. pentagonalis* sp. n. Antarctic, KÖHLER Aust. Ant. Exp. 1911-14 Sci. Rep. Zool. Bot. 8 pp. 195 235-236 pls. xxviii figs. 3 4 8; xli figs. 3 10 11; lxxi fig. 3.

*Evasterias*, BUSH 16.

*Ferdina* with *F. ocellata* sp. n. Torres Straits, CLARK Dept. Mar. Biol. Carnegie Inst. 10 p. 60 pls. vi fig. 5; xxxi figs. 1 & 2.

*Fromia* with *F. pacifica* Pacific; *elegans* Torres Straits; *hadracantha* Philippines spp. n., CLARK Dept. Mar. Biol. Carnegie Inst. 10 pp. 42 & 45 pls. vii fig. 3; xxix figs. 5 & 6; xxxi figs. 5 & 6

*Gephyreaster*, BUSH 16.

*Glabraster* gen. n. Type *Porania magellanica* Stud., CLARK J. Wash. Acad. Sci. 6 p. 121.

†*Goniaster*, BELL 7.

*Goniasteridae*, CLARK 23.

*Gnathaster*, KÖHLER 73.

*Habroporina* gen. n. *Poraniidae* with *H. pulchella* sp. n. Torres Strait, CLARK Dept. Mar. Biol. Carnegie Inst. 10 p. 34 pls. iv fig. 2; xxiv figs. 2 3; xxvi figs. 4 5.

*Hacelia* with *H. superba* sp. n. off Bartados, CLARK Dept. Mar. Biol. Carnegie Inst. 10 p. 87 pl. xxxii.

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*Hymenaster coriaceus, pudicus* spp. n. Antarctic, KÖHLER Aust. Ant. Exp. 1911-14 Sci. Rep. Zool. Bot. 8 pp. 173-177 pls. xxxix figs. 1-2; xxxvi figs. 8-10.—H., KÖHLER 75.

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*Leiaster* with *L. brevispinus* sp. n. Pacific, CLARK Dept. Mar. Biol. Carnegie Inst. 10 p. 74 pl. xxx.

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*Leptoplychaster accrescens, longipes* spp. n. Antarctic, KÖHLER Aust. Ant. Exp. 1911-14 Sci. Rep. Zool. Bot. 8 pp. 246-258 pls. lii fig. 5; liii figs. 1-3; liv figs. 2-9; lv fig. 1; lxxiv fig. 1; li figs. 1-4; lxxv fig. 3.

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*Mariaster* gen. n. Type *Johannaster giganteus* Goto, CLARK J. Wash. Acad. Sci. 6 p. 116.

*Metadontaster* gen. n. with *M. waitei* sp. n. Antarctic, KÖHLER Aust. Ant. Exp. 1911-14 Sci. Rep. Zool. Bot. 8 pp. 193 219-226 pls. xlv figs. 1-6; xlvii figs. 5 6; xlviii fig. 8; xlix figs. 1-3; lxxi figs. 1-2.

†*Metopaster hortensae* sp. n. Lower Cretaceous, Texas, ADKINS & WINTON Bull. Texas Univ. 1945 p. 46 pl. x figs. 2-4.



*Metrodiridae*, CLARK 23.

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†*Onychaster flexilis*, CLARKE 36.

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†*Pentagonaster texensis* sp. n. Lower Cretaceous Texas, ADKINS & WINTON Bull. Texas Univ. 1945 p. 47 pl. x figs. 5-6.

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*Sporasterias*, KÖHLER 73.

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*Tridontaster* gen. n. with *T. laseroni* sp. n. Antarctic, KÖHLER Aust. Ant. Exp. 1911-14 Sci. Rep. Zool. Bot. 8 pp. 193 214-219 pls. xlvii figs. 7-10; xlviii figs. 1-7; lxix fig. 5.

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*Amphiura* with *A. griegi* sp. n. Norway, MORTENSEN Vid. Med. Nat. For. 72 pp. 54-60.

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*Ophiopsila* with *O. californica* sp. n. S. California, CLARK Proc. Biol. Soc. Wash. 34 1921 p. 109.

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†*Agassizocrinus dissimilis* sp. n. Paint Creek formation U.S.A., WELLER Bull. geol. Surv. Ill. Urbana 41 p. 344 pl. v figs. 29-30.

†*Amecystis* gen. n., ULRICH & KIRK Proc. Biol. Soc. Washington 34 pp. 147-148.

*Antedon* gen. n. Type *Antedon psyche* Cl., CLARK J. Wash. Acad. Sci. 7 p. 128.

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†*Comanthocrinus* gen. n. with *C. priscus* sp. n. Devon U.S.A., SPRINGER Smiths. Inst. U.S. Nat. Mus. Bull. 115 pp. 4-7.

*Comasteridae*, CLARK 23.

*Comatonia* gen. n. Type *Actinometra cristata* (Carp.) Hartl., CLARK J. Wash. Acad. Sci. 6 p. 115.

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†*Dichocrinus girtyi* sp. n. Shetlerville formation U.S.A., WELLER Bull. geol. Surv. Ill. Urbana 41 pp. 334–336 pl. v figs. 5–12.

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†*Himerocrinus* gen. n., for type *Hadrocrinus plenissimus* Lyon, SPRINGER Bull. U.S. Nat. Mus. 115 p. 12.

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†*Technocrinus niagarensis* sp. n.  
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†*Tetracrinus*, BELL 7.

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# VI. VERMES

ARRANGED BY

H. M. WOODCOCK.

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[Vacant.]

#### MESOOZA.

[Vacant.]

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# VII. BRACHIOPODA AND BRYOZOA

BY

W. N. EDWARDS.

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## (a) BRACHIOPODA

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ARRANGED BY

H. B. PRESTON.

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*Pyrgulofusus harpa* fig., DALL U.S. Nation. Mus. Bull. 112 pl. vii fig. 1.

†*Pyrifusus* (*Neptunella*) *gracilis* sp. n. Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. Geol. Surv. 128-A p. 41.

†*Pyropsis hancocki* sp. n. Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. Geol. Surv. 128-A p. 42.

†*Pyryla*, WRIGLEY 503.

*Searlesia dira* fig., DALL U.S. Nation. Mus. Bull. 112 pl. viii fig. 1.

†*Siphonalia quadrilineata* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 15.—*S. spiracuta* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 246.

*Tritonalia rainei*, *barbarensis*, *interfossa*, *i. alpha*, *lurida aspera*, figg., DALL U.S. Nation. Mus. Bull. 112 pls. vi figs. 1, 5; xi fig. 8; xiii figs. 8, 12; xv fig. 11.

*Tritonidea*, DAUTZENBERG 139.

*Trophon*, MORSE 306.

†*Trunculariopsis* nom. n. for *Truncularia* Di Monterosato, mut., COSSMANN Rev. crit. paleozool. Paris 25 p. 79.

*Volutopsius stejnegeri*, *trophonius*, *simplex*, *stefanssoni*, *filosus*, *limatus*, figg., DALL U.S. Nation Mus. Bull. 112 pl. viii figs. 9, 11; ix figs. 1, 2; x fig. 1; xii fig. 8.

ATLANTIDÆ, CYMATIDÆ, CASSIDIDÆ, TONNIDÆ, CYPRÆIDÆ, STROMBIDÆ, APORRHAIIDÆ AND STRUTHIOLARIIDÆ. *Aporrhais*, MORSE 306.

†*Alaria*, DE BRUN & VEDEL 80.

*Anchura* (*Drepanochilus*) *americana* var. *pusilla*, *perveta* and var. *gracilis* spp. and var. n. Lance formation, Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. Geol. Surv. 128A pp. 38 & 39.

*Allanta*, KALKSCHMID 253.

†*Calyptrophorus septentrionalis* sp. n. Lance formation, Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. Geol. Surv. 128A p. 39.

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*Cypraea ostergaardi* nom. n. for *C. pacifica*, DALL Nautilus 35 p. 50.—*C.*, CHRISTENSEN 101.—*C.*, DAUTZENBERG 139.

†*Cypraea estellensis* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 14.—*C. fufana* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 244.

†*Orthaulax caepa* sp. n. Tertiary, Oligocene ? Cuba, COOKE Prof. Paprs. U.S. Geol. Surv. 129-B p. 31.

†*Ovula regularoidea* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 14.

*Ranella*, MORSE 306.

*Strombus*, DAUTZENBERG 139.

†*Strombus deningeri* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 244.

†*Triton*, WRIGLEY 503.

*Trivia cosmoi* sp. n. Seychelles, DAUTZENBERG J. Conchyliol. 65 pp. 330-331.

CERITHIIDÆ, PLANAXIDÆ, NERINEIDÆ, TRICHOTROPIDIDÆ, VERMETIDÆ, TURRITELLIDÆ AND CAECIDÆ.

†*Batillaria*, CHARPIAT 100.

†*Bourguetia*, DE BRUN & VEDEL 80.

*Caecum*, BARTSCH 40.

*Cerithiopsis fraseri*, *C. (Cerithiopsis) signa* British Columbia, *C. onealensis* Puget Sd., *C. (Cerithiopsis) willetti* Alaska, spp. n., BARTSCH Proc. Biol. Soc. Washington 34 pp. 34-36.

†*Cerithiopsis estellensis* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 15.

*Cerithium*, CHRISTENSEN 101.

†*Cerithium polygyrinum* Cretaceous, Argentina, *C. pucanense*, *miraflorense* Cretaceous, Bolivia, spp. n., FRITZSCHE Centralbl. Min. Stuttgart 1921 pp. 273-274.—*C. (Pirenella) guebbardi* sp. n. Tertiary, France, DOLLFUS Bull. soc. geol. Paris 18 p. 279.—*Cerithium (Potamides) baumbergeri*, sp. n. Tertiary, Switzerland, DOLLFUS Bull. soc. geol. Paris 18 p. 277.—*C.*, WRIGLEY 503. *C. gustavei* nom. mut. for *C. archiaci* Dollfus, COSSMANN Rev. crit. paleozool. 25 1921 p. 79.

*Elephantanellum* gen. n. with *E. carpenteri* sp. n. N. Pacific, BARTSCH J. Wash. Acad. Sci. 10 p. 567.

*Fartulum*, BARTSCH 40.

†*Glaucania*, DOUVILLÉ 158 & 159.

†*Mathilda insulindae* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 244.

*Micranellum* gen. n., BARTSCH J. Wash. Acad. Sci. 10 p. 568.

†*Nerinea*, NEWTON 310.

†*Pirena*, DOUVILLÉ 159.

†*Pleurocera*, DOUVILLÉ 159.

*Potamides* with *P. (Tympantotomus) margaritaceus* varr. n. *tabana*, *carica* Tertiary, Asia Minor, BUKOWSKI Sitzber. Ak. Wiss. Wien 128 pp. 97-111.

†*Promathildia*, DE BRUN & VEDEL 80 & 81.—*P. (Clathrobaculus) huddlestoni* sp. n. Jurassic COSSMANN Essais Pal. Comp. Paris 11 p. 341.

†*Pyrasus*, DOUVILLÉ 158.

*Tachyrhynchus lacteolus* fig., DALL U.S. Nation. Mus. Bull. 112 pl. vi fig. 2.

†*Terebraliopsis*, DOUVILLÉ 158.

*Trichotropis kroyeri*, T. (*Iphinoë*) *coronata*, figg., DALL U.S. Nation. Mus. Bull. 112 pl. xi figs. 1 & 2.—*T.*, MORSE 306.

*Triforis innocens* sp. n. S. Africa, SOWERBY Proc. Malac. Soc. 14 p. 127.

†*Triforis malayanus*, *seranus*, spp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 244.

*Turritella communis*, BATAILLON 41.—*T.*, MORSE 306.

†*Turritella haresi* sp. n. Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. Geol. Surv. 128-A p. 37.

†*Vermetus nodosus* sp. n. Pleistocene, California, OLDROYD Nautilus 34 p. 116.

†*Wexfordia* gen. n. and *W. dautzenbergi* sp. n. Pliocene, Ireland, HARMER Palaeont. Soc. London Plioc. Moll. vol. ii p. 704.

TIARIDÆ, PSEUDOMELANIIDÆ, PLEUROCERIDÆ, LITTORINIDÆ AND FOSSARIDÆ.

*Algamorda newcombiana* fig., DALL U.S. Nation. Mus. Bull. 112 pl. v fig. 5.

†*Amnicola* with *A. lustrica gelida* var. n. Pleistocene, U.S.A., BAKER Nautilus 35 pp. 22-23.—*A.*, PRASHAD 361.

*Anculosa*, GOODRICH 194.

†*Cithna*, HARMER 214.

*Fossarina*, POWELL 360.

†*Fossarus*, HARMER 214.—*F. (?) blesensis* sp. n. Tertiary, France, DE MORGAN Bull. soc. géol. 19 p. 341.

*Iselica fenestrata* fig., DALL U.S. Nation. Mus. Bull. 112 pl. xiii fig. 2.

*Lacuna porrecta* fig., DALL U.S. Nation. Mus. Bull. 112 pl. xiv fig. 2.—*L.*, MORSE 306.

†*Lacuna*, HARMER 214.

*Lithasia (Angitrema) fuliginosa* is a var. of *L. (A.) geniculata*; *L. duttoniana*, *angulata*, *parva*, *venusta*, *downiei* = *L. armigera*, GOODRICH Nautilus 35 pp. 58-59.

*Littorina littorea*, ELLIOTT 166.—*L. l.*, PELSENER 342.

†*Littorina* with *L. rudis* var. n. *reevei* Pliocene, Britain, HARMER Palaeont. Soc. London Plioc. Moll. vol. ii pp. 653-665.

*Melanoides*, PRASHAD 361.

†*Melanoides bicarinata* sp. n. Cretaceous, Argentina, FRITZSCHE Centralbl. Min. Stuttgart 1921 p. 273.

*Melanopsis* with *M. subtingitana* var. *laevis* var. n. Lower Mesopotamia, PRASHAD Rec. Ind. Mus. 18 pp. 225-227.

†*Melanopsis*, PALLARY 341a.

*Micromelania*, DYBOWSKI & GROCHMALICKI 161.

†*Omphaloptycha paronai* sp. n. Trias, Italy, MARTANI Natura Milano 12 pp. 81-98.

†*Pseudomelania*, DE BRUN & VEDEL 80.

*Turricaspia* subgen. n. of *Micro-melania* with *M. (T.) caspia* varr. n. *brunnea*, *inflata*, *major*, *pulla*, *pullula*, *M. (T.) turricula* var. n. *major*, *M. (T.) nova* sp. n., *M. (T.) spica* varr. n. *lordosa*, *lyrata*, *incisata*, *striata*, *M. (T.) Trachycaspia* *andrussovi*, *pseudodimidiata*, spp. n., *M. (Turricaspia)* *brusinae* sp. n., *M. (T.) Trachycaspia eulimellula* sp. n., *M. (T.) dimidiata* varr. n. *eucalia*, *gracilis*, *ptychophora*, *basalis*, *bicarinata*, Caspian Sea, DYBOWSKI & GROCHMALICKI Abh. Zool.-Bot. Ges. Wien 9 pp. 5-40 pls. i-iv.

SOLARIIDÆ, JEFFREYSIIDÆ, LITIOFIDÆ, RISSOIDÆ, HYDROBIIDÆ, VIVIPARIDÆ, VALVATIDÆ, AMPULLARIIDÆ AND ASSIMINEIDÆ.

*Alaba catalinensis* sp. n. California. BARTSCH J. Wash. Acad. Sci. 10 p. 572.

*Alvania sanjuanensis* San Juan Isd. *burrardensis* British Columbia spp. n., BARTSCH Proc. Biol. Soc. Washington 34 pp. 37-38.

*Ampullaria americanista*, *pulchella gallardoi* sp. and subsp. n. Argentina, IHERING Prim. Réun. Nac. soc. arg. Cienc. Nat. Buenos Aires 1919 pp. 330-337.

*Ampullariidae*, ANNANDALE 14.

*Assimineidae*, GUDE 206.

*Astenothyra* subgen. n. *Stenothyrrinae* with *A. burmanica* sp. n. Burma, ANNANDALE & PRASHAD Rec. Ind. Mus. 22 pp. 133-136.

*Belgrandia kusceri* sp. n. Jugo Slavia, WAGNER Sitzber. Ak. Wiss. Wien 123 p. 48.

*Bithynia* [vide etiam *Bythinia*], PRASHAD 361.

†*Bythinia* [vide etiam *Bithynia*] *dubia* sp. n. Tertiary, Spain, SCHLOSSER Centralbl. Min. Stuttgart 1921 p. 491.

†*Campeloma amarillensis* sp. n. Cre-taceous, New Mexico, STANTON Prof. Papers. U.S. Geol. Surv. 98 p. 318.

*Cyclostremella concordia* sp. n. Olga, Washington, BARTSCH J. Wash. Acad. Sci. 10 p. 572.

*Frauenfeldia saturata* sp. n. Jugo Slavia, WAGNER Sitzber. Ak. Wiss. Wien 123 p. 47.

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*Gerstfeldtia*, DYBOWSKI & GROCHMALIKI 161.

*Geyeria plagiostoma* sp. n. Jugo Slavia, WAGNER Sitzber. Ak. Wiss. Wien 123 p. 46.

*Gollewskia*, DYBOWSKI & GROCHMALICKI 161.

*Hydrobia jenkinsi*, ODHNER 318a.

†*Hydrobia subconoidalis* sp. n. Tertiary, France, DE MORGAN Bull. soc. géol. 19 p. 326.—H., WRIGLEY 503.

*Hydrobiidae*, ANNANDALE 13.

*Hypsobia nosophora*, ROBSON 375.

*Lartetia moenana*, HAAS 211.

*Moitessieria rollandiana*, HAAS 211.

†*Nystia tagica*, sp. n. Tertiary, Portugal, SCHLOSSER Centralbl. Min. Stuttgart 1921 p. 495.

*Pachylabra newilliana* sp. n. India, ANNANDALE Rec. Ind. Mus. 22 pp. 11-12.—P., ANNANDALE 11.

*Paladilhia pleurotoma*, HAAS 211.

*Paludestrina jenkinsi*, BOYCOTT 74.

*Potamopyrgus elongatus* sp. n. Tasmania, MAY Pap. & Proc. R. Soc. Tasmania 1920 p. 72.

*Rissoa*, MORSE 306.

†*Rissoina serana*, *trilirata*, spp. n., Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921.—R., WRIGLEY 503.

*Skenea*, MORSE 306.

*Solarium*, DAUTZENBERG 139.

†*Solarium*, DE BRUN & VEDEL 81.

*Stenothyra* with *S. ornata* sp. n. India, ANNANDALE & PRASHAD Rec. Ind. Mus. 22 pp. 123-133.

*Trachybaicalia*, DYBOWSKI & GROCHMALIKI 161.

*Tricula* with *T. gravelyi* sp. n. India, PRASHAD Rec. Ind. Mus. 22 pp. 67-69.—T., PRASHAD 361.

*Turbinicola* gen. n. Type *Ampullaria nux* Rve., ANNANDALE Rec. Ind. Mus. 22 pp. 9-11.

*Valvata macrostoma*, OLDHAM 320.



†*Valvata* with *V. tricarinata supra-carinata* var. n. Pleistocene, U.S.A., BAKER Nautilus 35 pp. 23-24.—*V. yaviana, satira*, Cretaceous, Argentina, *V. humilis* Cretaceous, Bolivia, spp. n., FRITZSCHE Centralbl. Min. Stuttgart 1921 pp. 273-274.

*Vitrella absoloni* sp. n. Jugo Slavia, WAGNER Sitzber. Ak. Wiss. Wien. 123 p. 45.

CYCLOPHORIDÆ, CYCLOSTOMATIDÆ AND TRUNCATELLIDÆ.

*Acme banatica leptocheila* subsp. n. Balkans, STURANY & WAGNER Denk. Ak. Wiss. Wien 91 p. 83.

†*Acroptychia*, GERMAIN 188.

*Auritus* (A.) *sturanyi scalariniformis, mnelensis*, A. (*Pleuropoma*) *roseoli rioliensis* subsp. n. Balkans, STURANY & WAGNER Denk. Ak. Wiss. Wien 91 pp. 84-86.

*Craspedopoma*, COCKERELL 112.

*Cyclophoridae*, GUDE 206.—C., KRETZSCHMAR 262.

*Cyclophorus ceylanicus*, SCHNEIDER 396.

†*Cyclostoma bisulcatoides* sp. n. Tertiary, Portugal, SCHLOSSER Centralbl. Min. Stuttgart 1921 p. 496.

*Diplommantina tumida* varr. n. *abdita, laisanensis* India, GUDE Fauna Brit. India iii 1921 pp. 337-338.

*Eutudora* (*Eutudorops*) *paradoxum* sp. n. Cuba, DE LA TORRE & HENDERSON Proc. U.S. Nation. Mus. 59 p. 264.

*Leptopoma nitidum*, BARTSCH 38.

†*Mascaria*, GERMAIN 188.

*Nodopomatias* nom. mut. *Eupomatias* G.-A., GUDE Fauna Brit. India iii 1921 p. 161.

†*Omphalotropis madagascariensis* sp. n. Quaternary, Madagascar, GERMAIN Ann. paléont. Paris 10 p. 30.

*Opisthosiphon* (*Opisthosiphona*) with *O.* (*O.*) *berryi semiapertum* subsp. n. *O.* (*O.*) *paredonense* and *O.* (*O.*) *p. paredonense, transitorium* sp. & subspp. n. *O.* (*O.*) *obturatum* and *O.* (*O.*) *o. obturatum, subobturatum banaoense* sp.

& subspp. n. *O.* (*O.*) *apertum, bioscai* and *b. bioscai* and *b. tersum, salustii, evanidum* and *e. evanidum* and *e. degenatum, occultum*, spp. & subspp. n., *O.* (*Opisthosiphon*) *protractum, judasense, delectum, obiectum* and *o. obiectum* and *o. tenuicostum, lamellicostatum* spp. & subspp. n. Cuba, DE LA TORRE & HENDERSON U.S. Nation. Mus. Proc. 59 pp. 247-263.

*Pomatias elegans*, BOYCOTT 75.—P. e., LAWSON 277.

†*Tropidophora*, GERMAIN 188.

*Truncatellidae*, GUDE 206.

HIPPONYCIDÆ, CAPULIDÆ, XENOPHORIDÆ, NARICIDÆ, ADEORBIIDÆ, LAMELLARIIDÆ AND NATICIDÆ.

†*Acrybia*, HARMER 214.

†*Amaura*, HARMER 214.

†*Amauropsis* with *A. pyeni, gracilis, odhneri* spp. n. Pliocene, Britain, HARMER Palaeont. Soc. London Plioc. Moll. vol. ii 1919 1921 pp. 700-703.

*Capulus californicus* fig., DALL U.S. Nation. Mus. Bull. 112 pl. xv fig. 6.

†*Capulus seranus*, sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 244.

*Crepidula*, MORSE 306.

*Crucibulum*, MORSE 306.

*Cryptonatica aleutica, clausa, janthostoma*, figg., DALL U.S. Nation. Mus. Bull. 112 pl. xiv figs. 10-12.

*Eunaticina oldroydi* figg., DALL U.S. Nation. Mus. Bull. 112 pl. xiv figs. 1 & 3.

*Euspira draconis, pallida* figg., DALL U.S. Nation. Mus. Bull. 112 pl. xiv figs. 4-6.

†*Fusispira*, RAYMOND 367.

*Lamellaria*, MORSE 306.

†*Lamellaria falunica* sp. n. Tertiary, France, DE MORGAN Bull. soc. géol. 19 p. 344.

*Megalomphalus californicus* fig., DALL U.S. Nation. Mus. Bull. 112 pl. xiv fig. 7.

*Natica aureozona* sp. n. S. Africa, TOMLIN J. Conch. Leeds 16 p. 217.—N., MORSE 306.

†*Natica* with *N. (Lunatia) cavellii*, *assimilis*, *N. (Polinices) hemiclausa* var. *oakleyensis* spp. & var. n. Pliocene, Britain, HARMER Paleont. Soc. London Philoc. Moll. vol. ii 1919 1921 pp. 672-699.

†*Tornus* with *T. dollfusi*, Redonian. *T. (Adeorbis) vidali*, Miocene; *T. (A.) pallaryi*, *monterosatoi*, Pliocene spp. n. COSSMANN Essais Pal. comp. 11 pp. 346-350.

*Velutina*, BÄRDARSON 30.—V., MORSE 306.

#### EPITONIIDÆ.

*Acirsa borealis* fig., DALL U.S. Nation. Mus. Bull. 112 pl. xiii fig. 10.

*Epitonium lowei*, *savinae* figg., DALL U.S. Nation. Mus. Bull. 112 pl. vi figs. 11 & 12.

†*Epitonium munistriatum*, *multi-liniferum*, *subacutum* spp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 pp. 10-11.—*E. clarki* sp. n. Pleistocene, California, OLDROYD Nautilus 34 p. 115.—*E. dakotense* sp. n. Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. Geol. Surv. 128a p. 35.

†*Niso*, WRIGLEY 503.

*Opalia varicostata* fig., DALL U.S. Nation. Mus. Bull. 112 pl. xiii fig. 11.

*Scala (Sodaliscala) opposita*, (*Hyaloscala*) *reconducta*, (*Acrilla*) *recreata* spp. n., Port Alfred, S. Africa, DE BOURY Bul. Mus. Paris 1921 pp. 233-235.

*Scalaria*, MORSE 306.

†*Scalaria*, WRIGLEY 503.

#### STROMBIFORMIDÆ AND PYRAMIDELLIDÆ.

*Actis*, CHRISTENSEN 101.

*Eulima*, CHRISTENSEN 101.

†*Itruvia*, DOUVILLÉ 159.

*Menestho*, MORSE 306.

*Odostomia (Menestho) beauforti* sp. n. N. Carolina, JACOT J. Elisha Mitchell Sci. Soc. 38 p. 139.—*O. (Amaura) engbergi*, *sanjuanensis*, *washingtonia* spp. n. San Juan Isd., BARTSCH J. Wash. Acad. Sci. 10 pp. 570-571.—*O. (Chrysallida) cumshewaensis* sp. n. British Columbia, BARTSCH Proc. Biol. Soc. Washington 34 p. 34.—*O.*, CHRISTENSEN 101.

†*Odostomia (Evalea) bartschi* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 8.—*O.*, WRIGLEY 503.

†*Pyramidella* with *P. (Iphiana) obtusoides* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 10.

*Turbonilla (Chemnitzia) engbergi* sp. n. San Juan Isd., BARTSCH J. Wash. Acad. Sci. 10 p. 570.—*T. (Strioturbonilla) kincaidi* sp. n. Puget Sd., BARTSCH Proc. Biol. Soc. Washington 34 p. 33.—*T.*, MORSE 306.

†*Turbonilla (Ptycheulimella) elinensis*, *tardiusculus*, *T. (Cingalina) tuscahomensis*, spp. n., Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 9.—*T. ? cordensis* Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. Geol. Surv. 128a p. 34.—*T. malayana* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 244.

#### PROSERPINIDÆ AND HELICINIDÆ.

*Diplopinax* subgen. n. *Geophorus*, BARTSCH J. Wash. Acad. Sci. 8 p. 655.

*Helicina occulta*, SHIMEK 406.

†*Helicina occulta*, SHIMEK 406.

*Helicinidae*, GUDE 206.

*Schistopinas* subg. n. *Geophorus*, BARTSCH J. Wash. Acad. Sci. 8 p. 654.

#### NERITIDÆ, NERITOPSIDÆ, TURBINIDÆ, TROCHIDÆ AND ORBITESTELLIDÆ.

†*Ataphrus (Pleuroella) normaniensis*, *A. (Endianaulax) apiculatum*, Lias; *A. acmon* (d'Orb.) var. *bajocensis*, Jurassic spp. & var. n. COSSMANN Essais Pal. comp. 11 pp. 342-344.

†*Chilodonta douvillei* sp. n. Jurassic COSSMANN Pal. comp. 11 p. 357.

†*Chilodontoidea hudlestoni* sp. n. Jurassic COSSMANN Essais Pal. comp. 11 p. 356.

*Cidarina carlotta* fig., DALL U.S. Nation. Mus. Bull. 112 pl. xviii fig. 4.

†*Cirsoschilus*, DOUVILLÉ 158.—*C. peyroti*, Oligocene; *C. dollfusi*, Pliocene spp. n. COSSMANN Essais Pal. comp. 11 pp. 351-353.

*Clanculus atricatena* sp. n. S. Africa, TOMLIN J. Conch. Leeds 16 p. 216

†*Collonia lacoingtrei* sp. n. Miocene  
COSSMANN Essais Pal. comp. 11 p. 355.

†*Cyclostrema* (?) *martini* sp. n.  
Pliocene, Moluccas, FISCHER Centralbl.  
Min. Stuttgart 1921 p. 243.

†*Eucyclus*, DE BRUN & VEDEL 80.

†*Eumargarita* (*Solariella*) *douvillei*  
Cretaceous; *E. (Microgaza) pontilevi-*  
*ensis*, *E. (Turricula) tatei* Miocene spp.  
n. COSSMANN Essais Pal. comp. 11  
pp. 358-359.

*Gibbula coxi*, Ang., TOMLIN 446.  
—*G. (Colliculus) courjaulti* sp. n.  
Miocene COSSMANN Essais Pal. comp.  
11 p. 361.

†*Helicocrypteus brasili* sp. n. Jurassic  
COSSMANN Essais Pal. comp. 11 p. 355.

†*Leptolhyra carinulata* sp. n. Pliocene  
COSSMANN Essais Pal. comp. 11 p. 352.

*Lirularia lirulata, parcipicta, opta-*  
*bilis, succincta, acuticostata, funiculata,*  
*figg.*, DALL U.S. Nation. Mus. Bull. 112  
pls. xvii figs. 1 3 7 9; xviii figs. 5 10.

*Machaeroplax obscurus*, ? *M. rudis*  
*figg.*, DALL U.S. Nation. Mus. Bull. 112  
pl. xviii figs. 11-14.

*Margarita*, DALL 133.—*M.*, MORSE  
306.

*Margarites johnsoni* nom. n. for *Mar-*  
*garita acuminata* Migh. & Ads. non  
Sow, DALL Nautilus 35 p. 49.—*M.*  
*marginatus, albolineatus, beringensis,*  
*umbilicalis, paupercula, figg.*, DALL U.S.  
Nation. Mus. Bull. 112 pl. xvi figs.  
1-6; xviii figs. 7 8 15.

†*Mölleria*, HARMER 214.

†*Nerita brouzetensis* COSSMANN nom.  
mut. for *N. bruni*, COSSMANN Rev.  
crit. paléozool. 24 1920. p. 175.

*Neritina*, DAUTZENBERG 139.—*N.*,  
PRASHAD 361.

†*Neritina baueri* sp. n. Cretaceous,  
New Mexico, STANTON Prof. Paprs.  
U.S. Geol. Surv. 98 p. 317.—*N.*,  
DOUVILLÉ 158.—*N.*, WRIGLEY 503.—  
*N. beziéri* sp. n. Eocene, France, DAL-  
MIER Compte-Rendu soc. géol. France  
1917 p. 63.

†*Norrisella subscalata, sacyi* spp. n.  
Oligocene COSSMANN Essais Pal. comp.  
11 pp. 360-361.

*Phusianella tomlini* sp. n. Western  
Australia, GATLIFF & GABRIEL Proc.  
Malac. Soc. 14 p. 173.

†*Phasianella*, DE BRUN & VEDEL  
80.—*P. (Steganomphalus) girondiensis*  
sp. n. Oligocene COSSMANN Essais Pal.  
comp. 11 p. 354.

*Pupillaria pupilla, rhodia, sordida,*  
*simbla, salmonea, figg.*, DALL U.S.  
Nation. Mus. Bull. 112 pls. xvii figs. 2 4  
10-12; xviii figs. 3 6 9.

*Solariella peramabilis, triplostephanus*  
*figg.*, DALL U.S. Nation. Mus. Bull. 112  
pl. xvii fig. 8; xviii figs. 1 2.

*Stomatella bicarinata*, A. Ads.=  
*Gibbula coxi*, Ang.; *S. biporcata*, A.  
Ads. is a valid name; *S. margaritana*,  
A. Ads.=*Trochus roseus* Gmel., TOMLIN  
J. Conch. Leeds 16 p. 237.

*Tegula (Promartynia) pulligo* figg.,  
DALL U.S. Nation. Mus. Bull. 112  
pl. xvii figs. 5 6.

†*Tegula hemphilli* sp. n. Pleistocene,  
California, OLDROYD Nautilus 34 p. 115.

†*Teinostoma subangulata* var. *smithi*,  
*regularis* var. and sp. n. Eocene, U.S.A.,  
ALDRICH Bul. Amer. Pal. Ithaca 9  
No. 37 pp. 11-12.

†*Tinostoma* with *T. boussaci* sp. n. *T.*  
(*Solariorbis*) *dollfusi* nom. mut. Miocene  
COSSMANN Essais Pal. comp. 11 pp.  
344-345.

*Trochus pennanti*, Phil., TOMLIN 445.  
—*T. roseus*, Gmel., TOMLIN 446.—*T.*,  
MORSE 306.

†*Trochus insulindae, alfuricus, spp.*  
n. Pliocene, Moluccas, FISCHER Cen-  
tralbl. Min. Stuttgart 1921 p. 243.—  
*T. (Calliostoma)*, DE BRUN & VEDEL 80.

†*Turbo santavallensis* sp. n. Cre-  
taceous, Peru, FRITZSCHE Centralbl.  
Min. Stuttgart 1921 p. 276.—*T.*, DE  
BRUN & VEDEL 80.—*T. (Senecus)*  
*martinicensis* sp. n. Miocene COSSMANN  
Essais Pal. comp. 11 p. 350.

*Umboium anguliferum*, POWELL 360.

*Vitrinella (Docomphala) columbiana*  
sp. n. Departure Bay, BARTSCH Proc.  
Biol. Soc. Washington 34 p. 39.

STOMATIIDÆ, COCCULINIDÆ, HALIOTIDÆ  
PLEUROTOMARIIDÆ, BELLEROPHON-  
TIDÆ & FISSURELLIDÆ.

†*Bellerophon chesterensis* sp. n. Basal,  
Okaw and Golconda limestones, Illinois,  
WELLER Bull. Geol. Surv. Illinois 41  
p. 365.—*B.* with *B. ledburyensis, sphaera*



var. *judez* sp. & var. n. Silurian, Britain, REED Palaeont. Soc. London Mon. Ord. Sil. Bellerophon. Pt. ii 1919 1921 pp. 52-58.

†*Bucaniopsis* with *B. forbesi*, *nicoli*, spp. n., Ordovician, Britain, REED Palaeont. Soc. London Mon. Ord. Sil. Bellerophon. Pt. ii 1919 1921 pp. 58-62.

†*Bucanopsis ornatus* sp. n. Basal Okaw and Golconda limestones, Illinois, WELLER Bull. Geol. Surv. Illinois 41 p. 366.

†*Carinaropsis* with *C. gracilis*, *maccoyi* spp. n. Ordovician, Britain, REED Palaeont. Soc. London Mon. Ord. Sil. Bellerophon. Pt. ii 1919 1921 pp. 86-87.

*Cemoria*, MORSE 306.

†*Cymbularia* with *C. drummuckensis* Ordovician, Britain; *C. merita*, *turnbulli*, Silurian, Britain; *C. youngi* Ordovician, Britain; *C. ? woodlandensis* Silurian, Britain, spp. n., REED Palaeont. Soc. London Mon. Ord. Sil. Bellerophon. Pt. ii 1919 1921 pp. 63-70.

*Euphemus randolphensis* sp. n. Basal Okaw and Golconda limestones, Illinois, WELLER Bull. Geol. Surv. Illinois 41 p. 365.

*Fissurella mutabilis* var. n. *aurantia* S. Africa, SOWERBY Proc. Malac. Soc. 14 p. 127.—F., DAUTZENBERG 139.

*Haliotis kamchatkana*, *cracherodii* mut. *holzneri*, c. mut. *imperfata*, *wallalensis*, figg., DALL U.S. Nation. Bull. Mus. 112 pls. xix figs. 1 2; xx figs. 1-3; xxi figs. 1 2; xxii figs. 1 2.

*Hemitoma golischae* fig., DALL U.S. Nation. Mus. Bull. 112 pl. v fig. 2.

†*Hormotoma*, RAYMOND 367.

†*Murchisonia whiteavesi* nom. mut. for *M. archiaciana*, Whiteaves p. 79. COSSMANN Rev. crit. paléozool. 25 1921.

†*Phragmostoma* with *P. decipiens* sp. n. Silurian, Britain, REED Palaeont. Soc. London Mon. Ord. Sil. Bellerophon. Pt. ii 1919 1921 p. 84.

†*Pleurotomaria*, DE BRUN & VEDEL 80 & 81.

†*Ptychomphalus*, DE BRUN & VEDEL 81.

†*Salpingostoma* with *S. asteroideum*, *buccinoideum*, *etheridgei*, *shallochense* spp. n. Ordovician, Britain, REED Palaeont. Soc. London Mon. Ord. Sil. Bellerophon. Pt. ii 1919 1921 pp. 74-78 88.

†*Stappersella* subgen. n. of *Gosseletia*, MAILLIEUX Bul. Soc. geol. pal. Bruxelles 29 p. 144.

†*Temnodiscus* with *T. salopiensis*, *solitarius* spp. n. Silurian, England, REED Palaeont. Soc. London Mon. Ord. Sil. Bellerophon. Pt. ii 1919 1921 pp. 49-52.

†*Trematonotus* with *T. dilatatus* var. *girvanensis*, *T. portlocki* Silurian, Britain; *T. portlocki* Ordovician, Britain, sp. & var. n., REED Palaeont. Soc. London Mon. Ord. Sil. Bellerophon. Pt. ii 1919 1921 pp. 79-83.

†*Zonidiscus* with *Z. grayi* and var. *shallochensis*, *Z. ? transiens* spp. & var. n. Ordovician, Britain, REED Palaeont. Soc. London Mon. Ord. Sil. Bellerophon. Pt. ii 1919 1921 pp. 71-74.

#### ACMEIDÆ & PATELLIDÆ.

*Acmaea*, MORSE 306.

*Cellana*, POWELL, 360.

*Patella variabilis* var. n. *constellata* S. Africa, SOWERBY Proc. Malac. Soc. 14 p. 127.

†*Patella wienschmanni* sp. n. Conglomerate limestone, Wernigerode, BÖHM Zs. D. Geol. Ges. B 71 p. 82.

#### INCERTÆ SEDIS.

†*Amphitrochilia sybilloides* sp. n. Jurassic, France, COSSMANN Comptes Rendu soc. géol. France Paris 1920 p. 100.

†*Chara elliptica*, *ovalis*, spp. n. Cretaceous, Argentina, FRITZSCHE Centralbl. Min. Stuttgart 1921 p. 273.

†*Crossostoma basili* sp. n. Jurassic COSSMANN Essais Pal. comp. 11 p. 342.

†*Gilbertia estellensis* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 13.

†*Laevibuccinum* (*Euryochetus* ?) *harrisi* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 16.

†*Mitrella fufana* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 245.

†*Scenella elevata* sp. n. Cambrian, England, COBBOLD Q. J. Geol. Soc. 76 p. 364.

†*Seminella alfurica* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 245.

†*Tiburnus algeriensis* sp. n. Pliocene CCSSMANN Essais Pal. comp. 11 p. 362.

#### Opisthobranchia (INCLUDING PTEROPODA).

*Acanthodoris* with *A. nanaimoensis* sp. n. Vancouver, O'DONOGHUE Trans. Can. Inst. Toronto 13 pp. 168-172.

*Actæon (Rictaxis) painei* fig., DALL U.S. Nation. Mus. Bull. 112 pl. iii fig. 5.—*A.*, WRIGLEY 503.

*Acteocina*, STRONG 432.

*Aeolidida*, O'DONOGHUE 319.

*Anisodoris*, O'DONOGHUE 319.

*Aplysia*, EALES 162.—*A.*, MERTON 298.

*Archidoris*, O'DONOGHUE 319.

†*Bulla*, WRIGLEY 503.

*Cadlina*, O'DONOGHUE 319.

*Chioraeba*, KJERSCHOW-AGERSBERG 259.

*Chioraera*, O'DONOGHUE 319.

*Coryphella* with *C. fusca, trilineata* spp. n. Vancouver, O'DONOGHUE Trans. Can. Inst. Toronto 13 pp. 194-197.

†*Cylichna teschi, serana, botella* spp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 247.

†*Cylichnella dakotensis* sp. n. Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. Geol. Surv. 128A p. 48.

*Cylichnella*, MESTAYER 299.

*Dendronotus* with *D. giganteus, rufus* spp. n. Vancouver, O'DONOGHUE Trans. Can. Inst. Toronto 13 pp. 183-190.

*Desmopteris pacificus* sp. n. N. Pacific, ESSENBERG Univ. Cal. Pub. Zool. Berkeley 19 pp. 85-86.

*Diaulula*, O'DONOGHUE 319.

*Dirona*, O'DONOGHUE 319.

*Doto* with *D. columbiana* sp. n. Vancouver, O'DONOGHUE Trans. Can. Inst. Toronto 13 p. 204.

*Firoloida kowalevskyi* Vayss., BRÜEL 79.

†*Helcionella, cingulata, oblonga, rugosa* var. *comleyensis* spp. & var. n. Cambrian, England, COBBOLD Q. J. Geol. Soc. 76 pp. 364-365.

*Hermisenda*, O'DONOGHUE 319.

*Idalia* with *I. vancouverensis* sp. n. Vancouver, O'DONOGHUE Trans. Can. Inst. Toronto 13 p. 176.

*Laila*, O'DONOGHUE 319.

*Lamellidoris*, O'DONOGHUE 319.

†*Latouchella* gen. n. *L. costata, L. (?) striata* spp. n. Cambrian, England, COBBOLD Q. J. Geol. Soc. 76 pp. 366-367.

*Limacina lesueurii*, PELSENEER 342.

*Philine*, MERTON 298.

*Pleurophyllidia*, O'DONOGHUE 319.

†*Ringicula dubia* sp. n. Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. Geol. Surv. 128-A p. 47.

†*Tenuiactæon* gen. n. with *T. pertenuis* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 16.

*Tethys*, MERTON 298.

†*Tornatina tumida* sp. n. Pleistocene, California, OLDROYD Nautilus 34 p. 116.

*Triopha elioti* sp. n. Vancouver, O'DONOGHUE Trans. Can. Inst. Toronto 13 p. 165.

*Tritonia*, O'DONOGHUE 319.

*Tylodina fungina* figg., DALL U.S. Nation. Mus. Bull. 112 pl. xv figs. 15-17.

#### Pulmonata.

TESTACELLIDÆ & SELENITIDÆ.

*Caecilioides spelaea, acicula jeskaloviciensis* sp. & subsp. n. Jugo Slavia, WAGNER Sitzber. Ak. Wiss. Wien 123 p. 45.

*Cibinia* gen. n. [*Daudebardiidae*], WAGNER Denk. Ak. Wiss. Wien 91 p. 444.

*Cochlicopa*, PIAGET 348.

*Daudebardiella asiana*, HAAS 211.

*Oleacina (Glandina) foucheri* sp. n. Costa Rica, DAUTZENBERG J. conchyliol. 65 pp. 327-329.

*Spelaeoconcha polymorpha* sp. n. Jugo Slavia, WAGNER Sitzber. Ak. Wiss. Wien 123 p. 43.

*Testacella maugei*, BYNE 86.—T., WAGNER 469.—T., WATSON 479.

†*Testacella pontileviensis* sp. n. Tertiary, France, DE MORGAN Bull. soc. géol. 19 p. 307.

*Testacellidae*, GUDE & WOODWARD 209.

*Testacelloides* subgen. n. *Testacella* Type *T. gestroi* Issel, WAGNER Anz. Ak. Wiss. Wien 51 p. 335.

ARIONIDÆ, LIMACIDÆ, PHYLAMYCIDÆ & ZONITIDÆ.

*Aegopsis croaticus laughoffeni* sp. n. Jugo Slavia, WAGNER Anz. Ak. Wiss. Wien 51 p. 335.—*A. spelaeus* sp. n. Jugo Slavia, WAGNER Sitzber. Ak. Wiss. Wien 123 p. 39.—*A. croaticus laughoffeni* subsp. n. Jugo Slavia, WAGNER Denk. Ak. Wiss. Wien 91 p. 149.

*Agriolimax*, PIAGET 348.

*Amalia*, PIAGET 348.

*Arion hortensis* var. [? n.] *alba* France, CARDOT Bull. Soc. Hist. Nat. Ardennes 16 p. 61.—*A. empiricorum*, TRAPPMANN 450.—A., COCKERELL 112.—A., PIAGET 348.

*Atopos galeatus* sp. n. Celebes, SIMROTH Abh. Senckb. Ges. Frankfurt a. M. 37 p. 278.

*Cellariopsis* subgen. n. of *Schistophallus* with *S. (C.) deubeli* sp. n. Hungary, WAGNER Anz. Ak. Wiss. Wien 51 p. 335.—*C.* subgen. n. of *Schistophallus*; *S. (C.) deubeli* sp. n. Hungary, WAGNER Denk. Ak. Wiss. Wien 91 pp. 405.

*Circinariidae*, GUDE & WOODWARD 209.

*Crystellus spelaeus* sp. n. Jugo Slavia, WAGNER Sitzber. Ak. Wiss. Wien 133 p. 42.—C., PIAGET 348.

*Euconulus*, PIAGET 348.

*Hemiplecta ambitiosa* sp. n. Xulla Isds., FULTON Proc. Malac. Soc. 14 p. 148.

*Hyalinia absoloni, nautiliformis, wagneri sinjiana* spp. & subsp. n. Jugo Slavia, WAGNER Sitzber. Ak. Wiss. Wien 123 pp. 40-42.—*H. (Morlina) glabra riloensis* subsp. n. Bulgaria, WAGNER Denk. Ak. Wiss. Wien 91 p. 462.—H., PIAGET 348.

*Limax food*, KRAUSSE 261a.—*L. flavus* var. [? n.] *grisea* France, CARDOT Bull. Soc. Hist. Nat. Ardennes 16 p. 63.—*L. agrestis*, SCHUURMANS STEKHOFEN 401.—*L. cinereo-niger*, HUGGINS 234.—L., BOYCOTT 75.—L., PIAGET 348.

†*Limax martyi* sp. n. Tertiary, France, DOLLFUS Bull. soc. géol. 20 p. 46.

*Milax gagates*, BACCHUS 23.—M., CHURCHILL 112.

*Morlina* subgen. n. of *Hyalinia*. STURANY & WAGNER Denk. Ak. Wiss. Wien 91 p. 27.

*Neomecklenburgia* gen. n. with *M. punctata* sp. n. Bismarck Archipelago, SIMROTH Abh. Senckb. Ges. Frankfurt a. M. 37 pp. 267-268.

*Ottonia* gen. n. with *O. coriacea*, *obscura* spp. n. Bismarck Archipelago, SIMROTH Abh. Senckb. Ges. Frankfurt a. M. 37 p. 264.

*Paraegopsis skipetaricus, bizonus*, spp. n. Albania, STURANY & WAGNER Denk. Ak. Wiss. Wien 91 pp. 26-27.

†*Parmacella pontileviensis* sp. n. Tertiary, France, DE MORGAN Bull. soc. géol. 19 p. 308.

*Parmarion* with *P. distans* sp. n. Lombok, SIMROTH Abh. Senckb. Ges. Frankfurt a. M. 37 p. 271.

*Petasina*, GUDE & WOODWARD 209.

*Phenacolimax retzezi* sp. n. Hungary, *P. austrasica* sp. n., WAGNER Denk. Ak. Wiss. Wien 91 pp. 472-473.

*Polita rogersi*, BACCHUS 24.

†*Propebloetia*, GERMAIN 188.

*Schistophallus* gen. n. with *Cellariopsis* subgen. n., WAGNER Anz. Ak. Wiss. Wien 51 p. 335.

*Semilimax*, PALLARY 341.

*Simrothia*, PIAGET 348.



*Vitrea*, GUDE & WOODWARD 209.

*Vitrina*, PIAGET 348.

*Xesta rufostriata* sp. n. Xulla Isds., FULTON Proc. Malac. Soc. 14 p. 148.

*Zonitidae*, GUDE & WOODWARD 209.

*Zonitoides*, GUDE & WOODWARD 209.  
—Z., PIAGET 348.

#### ENDODONTIDÆ.

*Endodontidae*, GUDE & WOODWARD 209.

#### HELICIDÆ.

†*Ampelita*, GERMAIN 188.

*Archelix*, PALLARY 341.

*Arianta*, PIAGET 348.

*Campylaea* (*Cattania*) *trizona pseudocingulata* subsp. n. Serbia; *C. (C.) maranajensis* and *M. petrovici* sp. & subsp. n. Albania; *C. (Liburnica) denudata ventricosa* subsp. n. Herzegovina, STURANY & WAGNER Denk. Ak. Wiss. Wien 91 pp. 50-53.—*C.*, PIAGET 348.—*C. foetens*, Stud. var. n. apicum Swiss Alps, PIAGET Bull. Murith. Sion 39 p. 28.

*Campylaeopsis* subgen. n. of *Helicigona*, STURANY & WAGNER Denk. Ak. Wiss. Wien 91 p. 44.

*Capillifera*, GUDE & WOODWARD 208 & 209.

*Cepaea nemoralis* and *C. hortensis*, BOETTGER 59.

*Cernuella*, GUDE & WOODWARD 209.

*Chilotrema*, PIAGET 348.

*Cochlicella*, PALLARY 341.

†*Dentellocaraculus*, OPPENHEIM 329.

*Epiphragmophora*, HANNA 212.

*Eremina*, BOETTGER 58.

*Eulota*, PIAGET 348.

*Fruticicola hispida oreinos* subsp. n. Bavaria, WAGNER Denk. Ak. Wiss. Wien 91 p. 484.—*F.*, GUDE & WOODWARD 209.—*F.*, PIAGET 348.

*Fruticicola (Monacha) vesetyi* sp. n. Caucasus, FRANKENBERGER Arch. Natg. 83a pt. 2 p. 72 fig. 6.

*Geomitra (Disculella) cenourens* sp. n. Madeira, COCKERELL Nautilus 35 p. 12.—*G.*, COCKERELL 114.

*Helicella virgata*, LAWSON 276.—*H. barbara*, WINCKWORTH 497.—*H.*, BOYCOTT 75.—*H.*, GUDE & WOODWARD 209.

*Helicidae*, GUDE & WOODWARD 209.

*Helicigona (Arianta) braueri, lju-betensis* spp. n. Serbia, STURANY & WAGNER Denk. Ak. Wiss. Wien 91 pp. 54-55.

*Helicodonta (H.) obvoluta albanica* subsp. n. Albania, STURANY & WAGNER Denk. Ak. Wiss. Wien 91 p. 31.—*H. obvoluta*, WINCKWORTH 494.—*H.*, PIAGET 348.

†*Helicophanta* with *H. guestieri* var. n. *preguestieri* Quaternary, Madagascar, GERMAIN Ann. paléont. Paris 10 pp. 8-11.

*Helicopsis*, GUDE & WOODWARD 208 & 209.

*Helix unifasciata* var. [? n.] *minor* France, CARDOT Bull. Soc. Hist. Nat. Ardennes 16 p. 76.—*H. (Acanthinula) lamellata* var. n. *albina* Great Britain, TAYLOR Naturalist London 769 p. 82.—*H. hortensis, nemoralis, pomatia*, HORSLEY 231.—*H. aspersa* monstr. *sinistrum*, HUGGINS 233.—*H. a.*, VELOSO 462.—*H. melanostoma*, CABANÈS 87.—*H. m.*, MARGIER 287.—*H. m.*, MARGIER & CABANÈS 288.—*H. pomatia*, CARDOT 92.—*H. p.*, FLÖSSNER 175.—*H. p.*, FREITAG 180.—*H. p.*, JORDAN & BEGEMANN 251.—*H. p.*, KUNZE 265.—*H. p.*, PFEIL 345.—*H. p.*, SCHMIDT 393.—*H. pomatia*, SCHUURMANS STEKHOFEN 401.—*H. p.*, TRAPPMANN 450.—*Helix subaperta* Ancey, COCKERELL 104.—*H. subplicata*, COCKERELL 114.—*H.*, PALLARY 341.—*H.*, PIAGET 348.

†*Helix cartaxensis* sp. n. Tertiary, Portugal, SCHLOSSER Centralbl. Min. Stuttgart 1921 p. 496.—*H. cotteri, quintanellensis*, spp. n., Tertiary, Portugal, SCHLOSSER Centralbl. Min. Stuttgart 1921 p. 496.—*H. [Anchistoma (Strobila)] La Bassetieri* sp. n. Tertiary, France, DE MORGAN Bull. soc. géol. 19 p. 313.—*H. (Iberus) delgadoi* sp. n. Tertiary Portugal, SCHLOSSER Centralbl. Min. Stuttgart 1921 p. 496.—*H. (Macularius) torresi* sp. n. Tertiary Portugal, SCHLOSSER Centralbl. Min. Stuttgart 1921 p. 496.—*H. subplicata*, COCKERELL 114.

*Helix (Tachea) atrolabiata* var. *komareki* subsp. n. Caucasus, FRANKENBERGER Arch. Natg. 83A pt. 2 p. 75 fig. 5.

*Idiomela* subgen. n., COCKERELL Proc. Malac. Soc. 14 p. 192.

*Isognomostoma*, PIAGET 348.

*Jacosta*, GUDE & WOODWARD 208 & 209.

*Leptaxis undata* var. n. *grandior* Madeira, COCKERELL Nautilus 34 p. 114.—*L.*, COCKERELL 114.

*Leucochroa candidissima*, CABANÈS 87.

*Monacha fallax* sp. n. Jugo Slavia, WAGNER Anz. Ak. Wiss. Wien 51 p. 337.

*Monachella* nom. n. Type *Helix incarnata* Müller, GUDE & WOODWARD Proc. Malac. Soc. 14 p. 179.

*Monachoides* nom. n. for *Monachella*, GUDE & WOODWARD Ann. Mag. Nat. Hist. 8 p. 625.

*Monilearia*, GUDE & WOODWARD 209.

*Obba marginata balutensis*, m. *boholensis*, m. *pelmasensis*, m. *mearnsi*, m. *zamboanga*, m. *lanaon*, m. *joloensis*, m. *samarensis* subspp. n. Philippines, BARTSCH J. Wash. Acad. Sci. 8 pp. 62-63.—*O. rota perezii*, r. *panglaoensis*, *moricandi hernandezensis*, *scrobiculata valenciensis* subspp. n. Philippines, BARTSCH J. Wash. Acad. Sci. 8 pp. 16-17.

*Obelus*, GUDE & WOODWARD 209.

*Oreohelix maculata* sp. n. Wyoming, HENDERSON Nautilus 35 p. 15.—*O.*, VANATTA 457.

*Patula*, PALLARY 341.—*P.*, PIAGET 348.

†*Patula pontileviensis* sp. n. Tertiary, France, DE MORGAN Bull. soc. géol. 19 1920 p. 310.

*Perforatella*, GUDE & WOODWARD 208.

*Petasiella* nom. n. Type *Helix undentata* Drap., GUDE & WOODWARD Proc. Malac. Soc. 14 p. 180.

*Plebecula* with *P. punctulata* var. n. [?] *lactescens* Madeira, COCKERELL Nautilus 34 p. 136.—*P. bowditchiana*, COCKERELL 112.—*P.*, COCKERELL 114.

†*Plebecula bowditchiana* with var. n. [?] *reducta* Madeira, COCKERELL Nautilus 34 p. 134.

*Polygyra sierrana, columbiana shasta* sp. & subsp. n. California, BERRY Nautilus 35 pp. 36-37.

*Punctum*, PIAGET 348.

*Pupillidae*, GUDE & WOODWARD 209.

*Pyramidula rotundata* var. *alba*, BACCHUS 22.—*P.*, PIAGET 348.

*Radiodiscus mariae* sp. n. Bogota, PILSBRY Nautilus 35 p. 49.

*Semifruticicola* gen. n. with *S. serbica* sp. n. Jugo Slavia, WAGNER Anz. Ak. Wiss. Wien 51 pp. 336-337.—*S. gen. n.* with *S. serbica* sp. n. Balkans, WAGNER Denk. Ak. Wiss. Wien 91 pp. 490-491.

*Tachea*, PALLARY 341.—*T.*, PIAGET 348.

*Theba*, GUDE & WOODWARD 209.

*Trochoidea*, GUDE & WOODWARD 208.

*Trochomorphidae*, GUDE & WOODWARD 209.

*Vallonia*, PIAGET 348.

*Xerocampylaea*, GUDE & WOODWARD 209.

*Xeroclivia*, GUDE & WOODWARD 209.

*Xerocrassa*, GUDE & WOODWARD 209.

*Xeroleuca*, GUDE & WOODWARD 209.

*Xerophila*, GUDE & WOODWARD 209.—*X.*, PALLARY 341.—*X.*, PIAGET 348.

*Zenobiella* nom. n. Type *Helix subrufescens* Miller, GUDE & WOODWARD Proc. Malac. Soc. 14 p. 179.

BULIMIDÆ, ORTHALICIDÆ AND BULIMULIDÆ.

*Adenodia* group n. *Bulimulus*, DALL J. Wash. Acad. Sci. 10 p. 119.

*Bulimulus*, DALL 137.

†*Bulimulus (Drymaeus) pontileviensis* sp. n. Tertiary, France, DE MORGAN Bull. soc. géol. 19 p. 314.

*Granella* group n. *Bulimulus*, DALL J. Wash. Acad. Sci. 10 p. 121.

*Granitza* group n. *Bulimulus*, DALL J. Wash. Acad. Sci. 10 p. 121.

*Granucis* group n. *Bulimulus*, DALL  
J. Wash. Acad. Sci. 10 p. 118.

*Liguus*, MOORE 303.—*L.*, PILSBRY  
352.—*L.*, SIMPSON 410.

*Naesiotu*, DALL 137.

*Nuciscus* group n. *Bulimulus*, DALL  
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*Ochsneria* group n. *Bulimulus*, DALL  
J. Wash. Acad. Sci. 10 p. 121.

*Olinodia* group n. *Bulimulus*, DALL  
J. Wash. Acad. Sci. 10 p. 120.

*Reclasta* group n. *Bulimulus*, DALL  
J. Wash. Acad. Sci. 10 p. 119.

*Saeronia* group n. *Bulimulus*, DALL  
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*Stemmodiscus* group n. *Bulimulus*,  
DALL J. Wash. Acad. Sci. 10 p. 120.

ENIDÆ, UROCOPTIDÆ AND PUPIDÆ.

*Acmopupa*, PILSBRY 354.

*Agardhia* (*A.*) *truncatella skipetarica*  
subsp. n. Balkans, STURANY & WAGNER  
Denk. Ak. Wiss. Wien 91 p. 65.—*A.*,  
WAGNER 471.

*Alinda* (*A.*) *biplicata eupleuris oreinos*  
*distinctior, elegantissima, A. (A.) hessei,*  
*h. oreinos, A. (A.) fallax golesnicensis,*  
*sp. & subspp. n. Balkans, STURANY &*  
*WAGNER Denk. Ak. Wiss. Wien 91*  
*pp. 79-81.*

*Alopiia* (*Herilla*) with *A. (H.) ex-*  
*cedens dardanorum, korabensis, illyrica*  
*miosis and diabasis, ziegleri* Albania,  
*A. (H.) bosniensis ibarensis and reducta*  
*Jugo Slavia sp. & subspp. n., WAGNER*  
*Sitzber. Ak. Wiss. Wien 56 pp. 57-62.—*  
*A. (Agathylla) biloba, A. (Albinaria)*  
*winrineguthi spp. n. Balkans, STURANY*  
*& WAGNER Denk. Ak. Wiss. Wien 91*  
*pp. 69-70.*

*Aspasita albanica sp. n. Balkans,*  
*STURANY & WAGNER Denk. Ak. Wiss.*  
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*Balea*, BOYCOTT 75.

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*Buliminus*, PALLARY 341.—*B.*,  
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*Chondrula* (*C.*) *macedonica* and *m.*  
*cazanikensis, m. procheuma, C. (C.)*  
*lugorensis, spp. & subspp. n. Balkans,*  
*STURANY & WAGNER Denk. Ak. Wiss.*  
*Wien 91 p. 62.—C., PIAGET 348.*

*Clausilia* (*Delima*) *crenulata smokvi-*  
*censis subsp. n. Dalmatian Islands,*  
*STURANY in GINZBERGER Denkschr.*  
*Ak. Wiss. Wien. 92 p. 401.—C. bidens,*  
*M. 383.—C. b., MARGIER 287.—C.*  
*biplicata, JENNINGS 248.—C. leuco-*  
*stigma, CABANÈS 87.*

*Delima* (*Delima*) *attemsi, giselae*  
*spp. n. Balkans, STURANY & WAGNER*  
*Denk. Ak. Wiss. Wien 91 pp. 73-75.*

*Gastrocopta*, PILSBRY 354.

*Gyliauchen*, PILSBRY 354.

*Microcerion*, PILSBRY 354.

*Microstele*, PILSBRY 354.

*Napaeopsis* subgen. n. of *Napaeus*,  
*STURANY & WAGNER Denk. Ak. Wiss.*  
*Wien 91 p. 58.*

*Negulus*, PILSBRY 354.

*Orcula wagneri, w. ljubetenensis sp. &*  
*subsp. n. Balkans, STURANY & WAGNER*  
*Denk. Ak. Wiss. Wien 91 pp. 63-64.*

*Pirostoma* (*P.*) *riloensis sp. n. Balkans,*  
*STURANY & WAGNER Denk. Ak. Wiss.*  
*Wien 91 p. 82.*

*Pupa*, PILSBRY 354.

†*Pupa* (*Pupilla*) *mariae, capitani*  
*spp. n. Tertiary, France, DE MORGAN*  
*Bull. soc. géol. 19 pp. 315-316.*

*Pupilla* with *P. annandalei sp. n.*  
*Burma PILSBRY Man. Conch. 26*  
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*Pupisoma*, PILSBRY 354.

*Pupoidens*, PILSBRY 354.

*Pupoides*, PILSBRY 354.

*Pupoidopsis* gen. n. with *P. ha-*  
*waiensis sp. n. Hawaii, PILSBRY Man.*  
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*Rhytidochasma* subgen. n. of *Agardhia*,  
*STURANY & WAGNER Denk. Ak. Wiss.*  
*Wien 91 p. 66.*

*Serbica macedonica choanostoma, S.*  
*schatzmayri subsp. & sp. n. Balkans,*  
*STURANY & WAGNER Denk. Ak. Wiss.*  
*Wien 91 p. 71.*

*Sterkia bakeri sp. n. Mexico, PILSBRY*  
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*Truncatellina* with *T. rivierana brit-*  
*tanica subsp. n. England, PILSBRY*  
*Man. Conch. 26 pp. 65-101 236-237.*



- Vertigo* with *V. hinkleyi* sp. n. Arizona, PILSBRY Man. Conch. 26 pp. 233-235.
- †*Vertigo pontileviensis, turonica, douvillei, roberti* spp. n. Tertiary, France, DE MORGAN Bull. soc. géol. 19 pp. 317-320.
- STENOGYRIDÆ AND ACHATINELLIDÆ.
- Achatinella lehuiensis meinickei* subsp. n. Hawaii, PILSBRY & COOKE Nautilus 34 p. 109.
- Achatina* with *A. gruveli*, *A. (Archachatina) marginata* var. *egregia* sp. & var. n. Cameroons, DAUTZENBERG Rev. Zool. Af. 9 pp. 87-97.
- Achatininae*, ROBSON 376.
- Amphidromus*, BARTSCH 37.
- Callistoplepa*, DAUTZENBERG 139.
- †*Clavator* with *C. grandidieri* var. n. minor Quaternary Madagascar, GERMAIN Ann. paléont. Paris 10 pp. 11-19.
- Cochlitoma*, LONGSTAFF 281.—C., ROBSON 376.
- Ferussacia*, PALLARY 341.
- Krapfiella mirabilis*, WATSON 478.
- Limicolaria*, DAUTZENBERG 139.
- Obeliscus (Protobeliscus) riparius* (Pfr.) and *O. cuneus* (Pfr.), SPENCE 417.
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- Oncidium* with *O. (Oncis) applanatum*, *O. (Oncidiella) mertonii*, *O. tricolor*, ARU Isds., *O. elberti* Celebes spp. n., SIMROTH Abh. Senckb. Ges. Frankfurt a. M. 37 pp. 292-297.
- Succinea groenlandica* var. n. *albina* Iceland, SCHLESCH J. Conch. Leeds 16 p. 225.—*S. oblonga*, BOYCOTT 75.
- Vaginula borelliana, difficilis, erinacea, laurentiana* Argentina, *V. robusta, americana, attenuata* Brazil, *V. festae, pulchra, propinqua, lugubris, esilicaulis* Ecuador, *V. morii* Bolivia, *V. absumpta* Paraguay spp. n., COLOSI Pavia Atti Soc. Ital. Sc. Nat. 60 pp. 1-7 [? original pagination].—*V.* with *V. leydigi* and var. *celebensis* and *keiana*, *V. rufiglandula* and var. *rufescens*, *V. signata* and var. *signator*, *V. variegatula, svelana, creophila* Malay Archipelago, *V. levucana* Fiji, *V. samoana* Samoa, *V. tahitana* Tahiti spp. & varr. n., SIMROTH Abh. Senckb. Ges. Frankfurt a. M. 37 pp. 281-292.
- ELLOBIIDÆ, LIMNÆIDÆ, PHYSIDÆ CHILINIDÆ, AND SIPHONARIIDÆ.
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- †*Ancylus pontileviensis* sp. n. Tertiary, France, DE MORGAN Bull. soc. géol. 19 p. 321.
- Bullinus broccchii*, NICOLLE & GOBERT 311.
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- Kerguelenia brannani* figg., DALL U.S. Nation. Mus. Bull. 112 pl. xv figs. 13 & 14.
- Lymnaea emarginata* and *ampla*, NYLANDER 312.
- Melampus*, MORSE 306.
- Pedipes crassidens* sp. n. French Guinea, BAYAY Bul. Mus. Paris 1920 p. 638.
- †*Physa reesidei* sp. n. Cretaceous, New Mexico, STANTON Prof. Paprs. U.S. Geol. Surv. 98 p. 319.
- Planorbis corneus*, BETTENCOURT (& OTHERS) 56.—P., PALLARY 341.
- †*Planorbis (Bathyomphalus) chacoensis* sp. n. Cretaceous, New Mexico, STANTON Prof. Paprs. U.S. Geol. Surv. 98 p. 319.—P. *multiformis*, PLATE 356.—P., GERMAIN 188.—P. *boliviensis* sp. n. Cretaceous, Bolivia, FRITZSCHE Centralbl. Min. Stuttgart 1921 p. 274.
- Pseudancylus* nom. n. for *Ancylastrum* Brgt., WALKER Nautilus 35 p. 58.
- Pythia*, PALLARY 341.
- †*Segmentina boulei* sp. n. Quaternary, Madagascar, GERMAIN Ann. paléont. Paris 10 p. 20.
- Siphonaria japonica* Don. an earlier name for *S. cochleariformis*, PILSBRY Nautilus 34 p. 141.—*S. grisea* vice *S. algesirae* Q. & G., IREDALE Proc. Malac. Soc. 14 p. 206.—S., DAUTZENBERG 139.
- Williamia peltoides* figg., DALL U.S. Nation. Mus. Bull. 112 pl. xv figs. 10 & 12.

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†*Alectryonia*, DE BRUN & VEDEL 80 & 81.

†*Anomia fufana* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 248.

†*Dimyopsis*, DE BRUN & VEDEL 80.

†*Exogyra*, DE BRUN & VEDEL 80.—*E.*, HENNIG 222.—*E.*, NEWTON 310.

†*Gryphaea*, NEWTON 310.—*G.*, POPESCU-VOITESTI 358.

†*Liogryphaea* with *L. primordialis* sp. n. Lias, DE BRUN & VEDEL Bull. Soc. Sci. Nat. Nimes 40 p. 85.

†*Liostrea* with *L. gammalensis* sp. n. Lias, DE BRUN & VEDEL Bull. Soc. Sci. Nat. Nimes 40 pp. 81-84.

†*Lopha* with *L. (?) philbyi* sp. n. Upper Jura, Arabia, NEWTON. Ann. Mag. Nat. Hist. 7 pp. 389-403.

*Ostrea* with *O. canveyensis*, *angulata erthenensis*, *vertex* spp. & var. n. Great Britain, BELL Essex Nat. 19 pp. 209-220.—*O. angulata*, PELSENER 342.—*O. edulis*, DOLLFUS 157.—*O.*, BELL 45 & 46.—[*O.*], CHURCHILL 103.—*O.*, DAUTZENBERG 139.—*O.*, DOLLFUS 156.

†*Ostrea intermedioides* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 23.—*O. (Rastellum) costellata*, *moussoni*, *O. (Gryphaea) exaltata*, *O. oxfordiana*, *planaria*, *O. (G.) controversa*, *deminuta*, *O. jurana*, *O. (G.) ledonica*, *gryphaeata*, *caprina*, *O. sublaeviuscula*, *gammalensis*, *curvata*, *laticornis*, *catinoides*, *dewalquei*, *lampada*, *trigona*, *dimidiata*, *subportella*, *sportella*, *kochiana*, *laufonensis*, *tombeckiana*, *hubertina*, *lorioliana* spp. n. Mesozoic, ROLLIER Mem. Soc. Pal. Suisse 42 pp. 543-595.—*O.*, NEWTON 310.

†*Plicatula ravni* sp. n. Danian, Copenhagen, ROSENKRANTZ Comm. Paleont.

Mus. Mineral. geol. Univ. Copenhagen 16 p. 34.—*P.* with *P. petitiolerci*, *piettei*, *lugdunensis arietina*, *spinosisima*, *mayalis*, *dumortieri*, *nippiana*, *spondyloidea*, *parkinsoniae*, *exaltata*, *cossmanni*, *pateroides*, *sequana*, *P. (Atreta) colleti*, *ungula*, *ambigua*, *toarciensis*, *oxfordiensis*, *lorioli*, *argoviensis*, *inconspicua* spp. n. Mesozoic, ROLLIER Mem. Soc. Pal. Suisse 42 pp. 503-542.—*P.*, DE BRUN & VEDEL 80 & 81.

## PECTINACEA.

†*Amussium*, DE BRUN & VEDEL 81.

†*Chlamys* with *C. cossmanni* sp. n. Lias, DE BRUN & VEDEL Bull. Soc. Sci. Nat. Nimes 40 pp. 95-99.—*C.*, DE BRUN & VEDEL 81.—*C.*, NEWTON 310.

†*Entolium*, DE BRUN & VEDEL 81.

†*Grandipecten* Cossmann synonym of *Gigantopecten* Rovereto, COSSMANN Rev. crit. paléozool. Paris 24 1920 p. 175.

†*Hinites cossmanni* sp. n. Charmouthian, ROLLIER Mem. Soc. Pal. Suisse 42 p. 618.—*H.*, NEWTON 310.

*Lima*, CROZIER 127.

†*Lima*, DE BRUN & VEDEL 80 & 81.

†*Pecten vaun* nom. n. for *P. vauhanii*, *P. v. var. flabellum* nom. n. for *P. vauhanii* var. *flabellum*, *P. (Chlamys) landi* nom. n. for *P. (C.) waylandi*, COOKE Nautilus 34 137.—*P. (Plagiocetenium) hallae*, *P. (Patinopecten) rhytidus* spp. n. Pliocene, Alaska DALL Nautilus 35 pp. 76-77.—*P. falki* Cretaceous, Westphalia, BÖHM Zs. D. Geol. Ges. Berlin 69 p. 195.—*P. cleburnensis* sp. n. Cretaceous, U.S.A., ADKINS & WINTON Bull. Texas Univ. 1945 p. 71.—*P. corneolus*, DUBOIS 160.—*P. gracilisquamosa* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 248.—*P. (Grandipecten) phrusinoniensis* sp. n. Miocene, Italy, CECCHIA-RISPOLI Boll. Soc. Geol. Ital. 39 p. 168.

†*Plagiostoma*, DE BRUN & VEDEL 81.

*Propeamusium alaskense* fig., DALL U.S. Nation. Mus. Bull. 112 pl. i fig. 2.

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†*Terquemia*, DE BRUN & VEDEL 81.

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†*Actinodesmina* subfam. n. *Pterineidae*, MAILLIEUX Bul. Soc. geol. pal. Bruxelles 29 p. 149.

*Adula diegensis* Dall fig., DALL U.S. Nation. Mus. Bull. 112 pl. i figs. 1 & 3.

*Atrina oldroydi* fig., DALL U.S. Nation. Mus. Bull. 112 pl. ii figs. 4 5 6.

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†*Crenella cedrensis elongata* spp. n. Lance formation, Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. Geol. Surv. 128-A p. 25.

†*Inoceramus*, SPENGLER 418.

†*Leiopterinae* subfam. n. *Aviculidae*, MAILLIEUX Bul. Soc. geol. pal. Bruxelles 29 p. 130.

*Meleagrina radiata*, PELSENER 342.  
—M., GRUVEL 205.

†*Modiola* with *M. gemmalensis* sp. n. Lias, DE BRUN & VEDEL Bull. Soc. Sci. Nat. Nimes 41 pp. 91 & 98.—*M.* with *M. mingaudi*, *romani*, *jolyi* spp. n. Lias, DE BRUN & VEDEL Bull. Soc. Sci. Nat. Nimes 40 pp. 101–106.

*Modiolarca trapezina*, BISPINGHOFF 57.

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†*Modiolus schallerensis* sp. n. Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. Geol. Surv. 128A p. 25.

*Musculus impressus* figg., DALL U.S. Nation. Mus. Bull. 112 pl. iii figs. 6 & 7.

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*Pinna fragilis*, RITCHIE 374.

†*Pinna*, DE BRUN & VEDEL 80.

†*Rousseauia* gen. n. with *R. pseudocapuliformis* sp. n. Paleozoic, MAILLIEUX Bul. Soc. geol. pal. Bruxelles 29 pp. 141–143.

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†*Arca allodebilis*, sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 248.—*A. (Cucullaria) ozarkensis* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 p. 22.—*A.*, DE BRUN & VEDEL 80.

†*Cucullaea solenensis*, sp. n. Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. geol. Surv. 128A p. 22.

*Leda baccata*, WINCKWORTH 496.

†*Leda chesterensis* sp. n. Basal Okaw and Golconda limestones, Illinois, WELLER Bull. geol. Surv. Illinois 41 p. 363.—*L. mansfieldi* sp. n. Lance formation, S. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. geol. Surv. 128A p. 20.—*L. alfurica*, *radiatelirata*, spp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 248.

†*Nucula platynotus* N. *randolphensis*, spp. n. Basal Okaw and Golconda limestones, Illinois, WELLER Bull. geol. Surv. Illinois 41 pp. 361–362.

†*Parallelodon*, DE BRUN & VEDEL 80 & 81.

†*Trigonarca* ? *hancocki* Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. geol. Surv. 128A p. 23.

†*Trigonia flexicostata*, *inca*, spp. n. Cretaceous, Peru, FRITZSCHE Centralbl. Min. Stuttgart 1921 p. 275.—*T. inouyei*, *sakamotensis* spp. n. Lias, Japan, YEHARA J. Geol. Soc. Tokyo 28 pp. 8 & 10.

†*Yoldia thomi* sp. n. Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. geol. Surv. 128-A p. 21.

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*Anodontites* with *A. hyrioides*, *hasemani* spp. n. Brazil, ORTMANN Mem. Carnegie Mus. 8 pp. 587–629.

*Arkansia wheeleri*, ORTMANN 335.

†*Astarte blaedouensis* for *A. striata* Sowerby, *Astarte goniatala* for *A. angulata* Guéranger, nn. mut., p. 80, COSSMANN Rev. crit. paléozool. 25 1921.

†*Astarte thurnauensis* nom. mut. for *Venus undata* (*A. undata* d'Orbigny) p. 80, COSSMANN Rev. crit. paléozool. 25 1921.



†*Astarte* with *A. repelini* sp. n. Lias, DE BRUN & VEDEL Bull. Soc. Sci. Nat. Nîmes 40 pp. 108-109.

†*Cardinia*, DE BRUN & VEDEL 80 & 81.

†*Cardita doncieuxi, mengeli, agerensis* spp. n. Eocene of Eastern Pyrenees, VIDAL Butll. Inst. Catal. N. H. 20 1920 pp. 125-126.

*Carunculina*, ORTMANN 334.

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†*Cyrtodonta* ? *planumbona* sp. n. Lower Ordovician, Ottawa, WILSON Mus. Bul. Ottawa 33 1921 p. 52.

*Diplodon* with *D. hasemani, imitator, similimus, vicarius, decipiens, hildæ, mogymirim, berthæ, enno* spp. n. Brazil, ORTMANN Mem. Carnegie Mus. 8 pp. 472-548.

†*Diplodon pennsylvanicus, borealis, wanneri, carolus-simpsoni, yorkensis* spp. n. Trias, U.S.A., WANNER Proc. Acad. Nat. Sci. Philad. 1921 pp. 32-35.

*Dromus*, ORTMANN 334.

*Elliptio*, ORTMANN 333.

†*Eriphyla* ? *mandanensis* sp. n. Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. geol. Surv. 128-A p. 28.

*Eurynia*, ORTMANN 334.

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†*Modiolopsis compacta* sp. n. Lower Ordovician, Ottawa, WILSON Mus. Bul. Ottawa 33 1921 p. 53.

*Monocondylæa* with *M. obesa, holandi* spp. n. Brazil, ORTMANN Mem. Carnegie Mus. 8 pp. 572-587.

*Mycetopoda Doello-Juradoi* sp. n. Argentina, VON IHERING Physis Buenos Aires 5 p. 75.—M., ORTMANN 336.

†*Mycetopoda diluculi* sp. n. Trias, U.S.A., WANNER Proc. Acad. Nat. Sci. Philad. 1921 p. 36.

†*Opis*, DE BRUN & VEDEL 80.

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*Spatha (Leptospatha) droueti* var. n. roseotincta Cameroons, DAUTZENBERG Rev. Zool. Af. 9 pp. 174-175.

*Symphanota*, WENNIGER 482.

*Unio pictorum*, ALKINS 6.

†*Unio amarillensis, gardneri, reesidei, baueri, neomexicanus, brimhallensis*, spp. n. Cretaceous, New Mexico, STANTON Prof. Paprs. U.S. Geol. Surv. 98 pp. 313-315.

*Unionidae*, ALLEN 9.

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*Galeomma peilei* sp. n. Bombay, TOMLIN J. Conch. Leeds 16 p. 156.

†*Montacuta herberti, bicuspidata* spp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 pp. 20 & 21.

*Rochefortia compressa* fig., DALL U.S. Nation. Mus. Bull. 112 pl. iii fig. 1.

†*Rochefortia minuta* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 20.

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*Cardium californiense* fig., DALL U.S. Nation. Mus. Bull. 112 pl. xiv fig. 8.—*C. edule*, WINCKWORTH 495.—C., DAUTZENBERG 139.

†*Cardium alfuricum* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 248.—C. (*Nemocardium*), DE BRUN & VEDEL 80.

†*Conocardium chesterensis* sp. n. Basal Okaw and Golconda limestones, Illinois, WELLER Bull. Geol. Surv. Illinois 41 p. 366.

*Protocardia richardsonii* fig., DALL U.S. Nation. Mus. Bull. 112 pl. ii fig. 3.

*Tridacna* with *T. maxima* var. n. fossor Capricorn Group, HEDLEY Rec. Austr. Mus. 13 pp. 163-172.

*Vesicomya (Callogonia) stearnsi* fig., DALL U.S. Nation. Mus. Bull. 112 pl. i figs. 6 & 7.

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†*Hippurites*, SPENGLER 418.

†A new genus unnamed of *Monopleuridae* HENNIG Zs. D. geol. Ges. Berlin Abhandl. 68 p. 454.

†*Sauvagesia degolyeri* sp. n. Cretaceous, Mexico, STANTON Proc. U.S. Nation. Mus. 59 p. 454.

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†*Basterotia ? prima* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 20.

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*Chione meridionalis* sp. n. Peru, OLDROYD Nautilus 34 p. 93.

*Clementia maclellandi* sp. n. S. Africa, TOMLIN J. Conch. Leeds 16 p. 215.

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†*Cytherea serana*, *lirevanida*, *supra-laevis* spp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 249.—C., WRIGLEY 503.

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†*Donax acutangula* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 22.

†*Dosinia steinmanni* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 248.

*Eupera platensis* sp. n. Argentina, DOELLO-JURADO Physis Buenos Aires 5 p. 73.

*Iphigenia*, DAUTZENBERG 139.

†*Isocardia*, DE BRUN & VEDEL 80.

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†*Psammobia smithi*, *harrisi* spp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 pp. 23-24.

*Psephidia cymata* fig., DALL U.S. Nation. Mus. Bull. 112 pl. iii fig. 2.

†*Sanguinolaria (Nuttallia) orcutti* sp. n. Pleistocene, DALL West. Amer. Scientist 19 p. 17.

*Solen ensis*, SHEPARD 405.

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†*Trapezium*, DE BRUN & VEDEL 80.

†*Venerupis praeradiata* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 249.

*Venus stutzeri* Don. an earlier name for *Circe scripta* L. var. *personata* Desh., PILSBRY Nautilus 34 p. 141.

*Villorita* with *V. cornucopia* sp. n. India, PRASHAD Rec. Ind. Mus. 22 pp. 111-119.

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†*Corbula chacoensis* sp. n. Cretaceous, New Mexico, STANTON Prof. Paprs. U.S. Geol. Surv. 98 p. 316.—C., DE BRUN & VEDEL 80.—*C. lamellata, infantula*, spp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 249.

†*Cryptomya magna* sp. n. Pleistocene, DALL West Amer. Scientist 19 p. 17.

†*Ervilia lignitica* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 21.

†*Liopistha pervinquieri*, L. (*Psilomya*) *alta* spp. n. Cretaceous, Egypt, GRECO Palaeontogr. Italica 24 pp. 52 & 54.

*Macra chionia* nom. n. for *M. complanata* Rve., TOMLIN J. Conch. Leeds 21 p. 226.—*M.*, DAUTZENBERG 139.

†*Macra*, WRIGLEY 503.

*Mya intermedia* fig., DALL U.S. Nation. Mus. Bull. 112 pl. iv.—*M. arenaria*, COLLIP 116.

†*Mya klinghardti* sp. n. Tertiary, S.W. Africa, BÖHM Zs. D. Geol. Ges. B 71 p. 78.

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*Panopæa*, DAUTZENBERG 139.

†*Panopea bellsensis* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 22.

†*Saxicava*, DE BRUN & VEDEL 81.

†*Saxicavella alabamensis* sp. n. Eocene, U.S.A. ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 21.

†*Schizothærus*, DALL 136.

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†*Spisula camaronis, longa* spp. n. Pleistocene, DALL West Amer. Scientist 19 p. 22.

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†*Lucina cedrensis*, Lance formation, N. Dakota, STANTON & VAUGHAN Prof. Paprs. U.S. geol. Surv. 128A p. 30.—*L. serana* sp. n. Pliocene, Moluccas, FISCHER Centralbl. Min. Stuttgart 1921 p. 248.—*L. primoidea* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 19.—*L.*, DE BRUN & VEDEL 80.—*L.*, WRIGLEY 503.

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*Bankiella* subgen. n. *Teredidae*, BARTSCH Proc. Biol. Soc. Washington 34 p. 25.

†*Martesia recurva* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 19.

*Neobankia* subgen. n. *Teredidae*, BARTSCH Proc. Biol. Soc. Washington 34 p. 25.

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†*Pholas miocaenica*, P. (*Zirfaea*) *dollfusi*, spp. n. Tertiary, France, DE MORGAN Bull. Soc. géol. 19 pp. 346 & 347.

†*Teredina neomexicana* sp. n. Cretaceous, New Mexico, STANTON Prof. Paprs. U.S. Geol. Surv. 98 p. 317.

*Teredo (T.) parksi* Oahu; *beachi* California; *T. (Teredothyra) dominicensis* Dominica spp. n., BARTSCH Proc. Biol. Soc. Washington 34 pp. 28-30.—*T.*, BÄRDARSON 30.—*T.*, KOFOID 260.

†*Teredo ringens* sp. n. Eocene, U.S.A., ALDRICH Bul. Amer. Pal. Ithaca 9 No. 37 p. 17.—*T.*, WETZEL 484.



*Teredops* subgen. n. *Teredidae*,  
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*Teredora* subgen. n. *Teredidae*,  
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*S. quentinensis* sp. n. Pleistocene, DALL  
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†*Tellina estellensis*, *bellsiana*, *semi-  
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*differens* spp. n. Upper Toarcian, S.E.  
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*mirabilis* sp. n. Upper Lias, Sicily,  
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 †*Cardioceras americanum, auroraense, bellepurchense, crassum, crookense, haresi, distans* var. *depressum, hyatti, martini, plattense, obtusum, russelli, schucherti, stillivello, stantoni* and var. *obesum, sundanense, whiteavesi, woyomingense, whitfieldi* spp. & varr. n. Jurassic, U.S.A., REESIDE Prof. Pprs. U.S. Geol. Surv. 118 pp. 18–34.—*C. alaskense, spiniferum* spp. n. Jurassic, Alaska, REESIDE Prof. Paprs. U.S. geol. Surv. 118 pp. 18 & 30.—*C. lillooetense* sp. n. Jurassic, British Columbia, REESIDE Prof. Paprs. U.S. geol. Surv. 118 p. 27.—*C. ? alboniense, incertum, latum* spp. n. Jurassic, U.S.A., REESIDE Prof. Paprs. U.S. geol. Surv. 118 pp. 35–37.  
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# IX. CRUSTACEA

ARRANGED BY

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# X. ARACHNIDA

TO WHICH ARE ADDED

GIGANTOSTRACA (XIPHOSURA, TRILOBITA, EURYPTERIDA),  
PANTOPODA, TARDIGRADA, PENTASTOMIDA, MYRIOPODA,  
and PROTOTRACHEATA

ARRANGED BY

STEPHEN K. MONTGOMERY, B.A., B.Sc.

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2.—Loman, J. C. C. Pycnogoniden von Juan Fernandez in Skottsberg, C. The Natural History of Juan Fernandez and Easter Island, Uppsala 3 1920 pp. 137-144 text-figs.

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# XI. INSECTA

BY

N. D. RILEY

(Assisted by H. CAMPION, W. E. CHINA, F. LAING and  
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BOX, 235; BUHK, 286; DONISTHORPE, 465, 466; ERNST, 572; GEBIEN, 720; HEYDE, 840; ISNARD, 888, 889; KLEINE, 960; KRAUSSE, 995, 1000, 1001; KRYGER, 1031; KUTTER, 1041; MANN, 1173; REICHENSBERGER, 1451; RÜSCHKAMP, 1525; SILVESTRI, 1615; STÄGER, 1645; STITZ, 1669; THIENEMANN, 1752.

**Wasp-life.**

FERTON, 621; NIELSEN, 1311;  
PARKER, 1345.

**Bee-life.**

ARNHART, 66; BRÜNNICH, 267;  
ENSLIN, 569; FERTON, 621; FRIESE,  
*Andrena labialis*, 685, 686; GUTHIER,  
763.

**Termite-life. Termitophily.**

FLETCHER, 642; HILL, 850, 852;  
MANN, 1171; MORSTATT, 1255.

**Parasitism.**

ASHWORTH, 70; BAER, 80; CUN-  
NINGHAM, 411; DRY, 486; DU BUYSSON,  
of *Phora fasciata*, 491; DUSTAN,  
*Campoplex pilosulus*, 498; FAHREN-  
HOLZ, 591; FAHRINGER, 593; GAUTIER  
& RIEL, 716; GREENE, 753; HABER-  
MEHL, 764; HENRIKSEN, 816; HESSE,  
*Ornithomyia avicularia*, on *Sitta*  
*caesia* Wolf p. 236, Zs. wiss.  
Insektenbiol. 16; KEILIN, 930; KRAUS,  
1003; KRÜGER, 1030; MASSINI, 1195;  
OUDEMANS, parasites of *Panolis*, 1344;  
PICARD, 1379; PIGEOT, 1388; RÜHL,  
1520; SÉGUY, 1588; STICHEL, W.  
*Epipyropidae*, Zs. wiss. Insektenbiol.  
16 p. 154; WHEELER & TAYLOR, 1919.

**Luminosity.**

BUGNION, 288; KANDA, 922; SNY-  
DER, 1633; VOGEL, 1858.

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494; ENSLIN, 567; FALKENSTRÖM,  
599; FRINGS, pp. 43-44 Ent. Rundsch.  
38; GUTBIER, 763; KLEINE, 956, 969,  
*Hyllobius*, 958; KRAUSSE, 991; KRUE-  
GER, 1029; STADLER, 1644.

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135; CHAMPLAIN, 346; GERHARDT,  
721; SCHULTZ, 1562; SURCOUF, 1721;  
UFFELN, abnormal, 1798; WEBER,  
1891.

**Parental. Oviposition.**

ADOLPH, 8; ALFIERI, 40; FLETCHER,  
641; LACREUZE & REHFOUS, Bul. Soc.  
Lep. Geneva 4 p. 137; LENZ, 1079;  
LESNE, of *Tipula*, 1081; SCOTT,  
1579; SHARMA & SEN, 1603; VALLE,  
1828; WARREN, 1877; WEBER, 1891.

**Cocoons. Pupal habits.**

BELLING, abnormal, D. ent. Zs. 1921  
p. 106; DEWITZ, 447; GORHAM,  
*Apanteles hyphantria*, 739; PICTET,  
1381; SCHUMACHER, 1570, 1571.

**Food-habits.**

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74; CAMPION, 313; CHOBOUT, 354;  
DAVIDSON, 424; DIETZE, 455; DOVER,  
472; FALCOZ, 598; HERING, leafminers  
829; HEYMONS, *Hypoborinae*, 841;  
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994; NIELSEN, 1311; SCOTT, 1578;  
UFFELN, 1797; VEITCH & GREENWOOD,  
Fiji *Insecta*, 1838; WEISS, *Diptera* and  
Fungi, 1898; WEISS & WEST, 1907,  
fungus insects 1905, 1906; WEISS &  
DICKERSON, 1902; WILLIAMS, 1935.

**Insects, Plants and Flowers.**

LAKON, 1056; MILES, 1237; RO-  
BERTSON, Ent. News Philadelphia 32  
p. 314 1921; URBAN, 1808; VOGEL,  
1858.

**Galls.**

BAGNALL & HARRISON, 85; BROWN,  
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Id., Proc. ent. soc. London 1920 p. 64,  
72, 80; RÖBER, 1486; TALBOT, 1738;  
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*Metoponia*, 886; KLEINE, 962;  
KRAUSSE, 993, 996; LESNE, biology of  
*Fannia* spp. 1082; MOLZ, 1245, 1244;  
PICTET, 1382, 1383; PRELL, 1422;  
RÜSCHKAMP, *Dermestidae*, 1524;  
SCHEIDTER, 1546; SCHULTZ, *Agrotis*  
*chardinyi*, 1563; SCHÜTTE, 1576;



SÉGUY, *Omphrale fenestralis* (Dip.), 1582; SIEGEL, *Odezia*, 1610; SMITH *Chrysopidae*, 1630; SURCOUF, *Stomoxys calcitrans*, 1719; TEICHMANN, 1743; TÖLG, 1776; WELLHOUSE, Hawthorn weevil, 1910; WILHELM, 1926, 1927; WILLE, 1933.

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#### Teratology.

CHOBOUT, *Brachynus* with 7 legs, *Miscell. ent.* 25 p. 67; KROGERUS, 1025; SANTSCHI, 1356; CALMBACH, 305; ČÁSTEK, *Saturnia*, 330; ESAKI, 573; SCHNEFF, 1557; WAGNER, *Orgyia*, 1867; WEHRLI, 1892.

#### Gynandromorphism.

KUSNEZOV, 1039; MÖBIUS, *Ellopija prosapiaria*, *D. ent. Zs. Iris* 32 p. 138, 1919; STEMMIG, *Parnassius*, 1656; STÖCKHERT, 1670; TALBOT, in various spp. of *Lepidoptera*, p. 55 *Proc. ent. soc. London* 1920 1921; WALTHER, *Malacosma franconica*, *D. ent. Zs. Iris* 32 p. 133, fig.

#### Evolution, Selection, Phylogeny.

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### GEOGRAPHY or FAUNISTIC.

#### General.

*Coleoptera* common to Europe and North America, DEVILLE, 445.

HERING, *Libytheidae*, 831.

India, HINGSTON, 854.

KOHL, *Hymenoptera*, 975.

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#### Antartic.

CARPENTER, *Collembola*, 325.

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#### Insular, including New Zealand.

*Coleoptera*. KRIESCHE, 1005; PIC, 1372, 1373.—*Hymenoptera*. CAMERON, 309; MANN, 1172.—*Lepidoptera*. SWEZEY, 1729.—*Diptera*. ALDRICH, 16; EDWARDS, 532.—*Hemiptera*. MYERS, 1285.—*Plecoptera*. ŠAMAL, 1532.

Faroe, Is., *Trichoptera*. ULMER, 1805.

Canaries, *Lepidoptera*, STERTZ, 1665.—*Diptera*, KRÖBER, 1014; PIERRE, 1387; SÉQUY, 1534; TONNOIR, 1781.—*Neuroptera*, NAVÁS, 1291.—*Psocoptera*, NAVÁS, 1296.

Madeira, *Hymenoptera*, COCKERELL, 372.—*Lepidoptera*, COCKERELL, *Entomol.* 54 p. 146.—*Diptera*, COCKERELL, 377.

Bismarck Arch., *Lepidoptera*, NIEFELT, 1313.

Solomon Is., *Coleoptera*, AURIVILLIUS, 73.

Rosel isld., Goodenough isld., *Lepidoptera*, PROUT, 1429.

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New Britain, *Hymenoptera*, KRIEGER, 1004.

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New Zealand, general, WALKER, 1870.—*Lepidoptera*, HUDSON, 876; MEYRIK, 1234; PHILPOTT, 1371; WATT, 1889.—*Neuropteroid* insects, TILLYARD, 1761.—*Trichoptera*, TILLYARD, 1771.—*Diptera*, ALEXANDER, 22; CAMPBELL, 311; MALLOCH, 1163; MILLER, 1238.—*Plecoptera*, TILLYARD, 1768.—*Paraneuroptera*, TILLYARD, 1770.

New Zealand, Kermadec islds., *Hemiptera*, MYERS, 1286.

Macquarie Isld., *Insecta*, TILLYARD, BRUES & LEA, 1772.

Society Is., POULTON, *Proc. ent. soc. London* 1920 p. 72 1921.

Cook Is., *Lepidoptera*, POULTON, *Proc. ent. soc. London* 1920 p. 72 1921.

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—*Hymenoptera*, DODD, 462.—*Diptera*, ALEXANDER, 25; EDWARDS, 539.

Samoa Islds., *Coleoptera*, MARSHALL 1180; Samoa, *Coleoptera*, PIC, 1372; KESSEL, 936.—*Lepidoptera*, SWEZEY, 1733.—*Homoptera*, MUIR, 1266.

Juan Fernandez, *Coleoptera*, Bernhauer, 176; GEBIEN, 719.—*Neuroptera*, NAVÁS, 1299.—*Diptera*, ALEXANDER, 18.—*Siphonaptera*, ROTHSCHILD, N. C., 1507.—*Hemiptera*, BERGROTH, 169.—*Collembola*, SCHÖTT, 1559.

Easter Island, *Coleoptera*, BERNHAUER, 176; BRYAN, 270.—*Neuroptera*, NAVÁS, 1299.—*Collembola*, SCHÖTT, 1559.

Hawaiian Islds., *Insecta*, SWEZEY, importations, 1727, Kauai, 1731; Immigrants, P. Hawai. ent. soc. 4 p. 610.—*Coleoptera*, PERKINS, 1360.—*Hymenoptera*, TIMBERLAKE, 1773; WILLIAMS, *Vespa*, P. Hawai. ent. soc. 4 p. 455.—*Lepidoptera*, SWEZEY, 1732.—*Diptera*, BRYAN, 269.—*Homoptera*, MUIR, 1265.—*Isoptera*, FULLAWAY, *Cryptotermes*, Proc. Hawai. ent. soc. 4 p. 457.

#### Palaearctic Region.

##### (a) Collectively.

*Insecta*.—OENENBERGER, 1325; PLAVILSTSHIKOV, 1400.

*Coleoptera*.—BREIT, 241; EGGERS, 547; DE LAPONGE, 432; DENIER, 434; HAUSER, *Carabidae*, 791; HEIKERTINGER, 807, 808; JACOBSON, 892; LOKAY, 1115, 1117; MÜLLER, 1277; NETOLITZKY, *Bembidion*, 1304; OGLOBLIN, 1330; REITTER, 1455; ROUBAL, 1510, 1513; SCHUSTER, *Tenebrionidae*, 1573, 1574; WINGELMÜLLER, 1939.

*Hymenoptera*. — ENSLIN, *Tenthredinidae*, 568; MEYER, 1230; STRAND, *Andrena*, 1703, *Halictus*, 1704; WHEELER, 1918.

*Lepidoptera*.—CARADJA, 318; COURVOISIER, 387; HOULBERT, *Cymatophoridae*, 870; REBEL, 1441; REVERDIN, *Erebina*, 1465; TURATI, 1791.

*Neuroptera*.—NAVÁS, 1300.

*Diptera*.—BECKER, 129; EDWARDS, 530, 534, 540; KRÖBER, 1007, 1008,

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*Plecoptera*.—KLAPÁLEK, 951.

##### (b) Europe, collectively.

*Coleoptera*.—BAUER, *Tenebrionidae*, 123; MOKRZECKI, 1243.

*Hymenoptera*. — SCHMIEDEKNECHT, 1552; WOLFF, 1942.

*Diptera*.—BEZZI, 188; KIEFFER, 944; KRÖBER, 1014; SCHMITZ, *Phoridae*, 1553; STEIN, *Anthomyidae*, 1657; TONNOIR, 1778; VIMMER & KOMÁREK, 1855.

*Thysanoptera*.—PRIESNER, 1426.

##### (c) North Europe and Siberia.

*Insecta*.—HELLEN, Finland, 811; RINGDAHL, 1482.

*Coleoptera*.—BELOUSOV, 136; JANS-SON, 898; KROGERUS, 1024; RAMBOUSEK, 1437, 1438.—Aaland Is., STENIUS, 1662.—E. Siberia, BERGER, 154; SPAETH, 1636; ZIMMERMANN, 1964.—Finland, CARPELAN, 322; HELLEN, 810; KROGERUS, 1026; SAHLBERG, 1529.

*Hymenoptera*. — MALAISE, 1156; NORDSTRÖM, 1317; SEMENOV-TIAN-SHANSKY, 1593.—Finland, FORSIUS, 649, 651; FORSIUS & NORDSTRÖM, 652; SHESTOKOV, Finland, 1608.—Sweden, MALAISE, 1157.

*Lepidoptera*.—BRYK 271, 278; CARPELAN, Finland, 322; LINGONBLAD, Finland, 1102; ROSA, Abisko and Bossekop, Entomol. 45 pp. 264–267, 280–282; STRAND, 1690; TSHUGUNOV, 1789.

*Diptera*.—EDWARDS, Sweden, 538; LUNDSTRÖM, 1124; STACKELBERG, 1642.

*Hemiptera*. — LINDBERG, 1097, Jenisejsk 1098, Finland 1099; LUND- BLAD, *Hydrometra*-larva 1122, Sweden 1123; STENIUS, Aaland Is. 1662.

*Thysanoptera*.—EECKE, 544.

*Plecoptera*.—KLAPÁLEK, 950.

*Paraneuroptera*.—BARTENEV, 111; VALLE, Finland, 1826, 1827.

*Orthoptera*. — STSHELKANOVITZEV, 1714.

(d) *British Isles*.

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*Insecta*.—BROWN, galls, 262;  
†COCKERELL 371, 373; DONISTHORPE,  
466.

*Coleoptera*.—ATKINSON, 72; CHAMPION, 343; †COCKERELL, 374; DONISTHORPE, 467, 468; EDWARDS, 542; HARWOOD, 778; JANSON, 897; JOY, 918; KEYS, 938; LEMAN, *Anthonomus britannus*, Ent. Rec. 33 p. 36; *Crypturgus pusillus*, introduced, TOMLIN p. 36 Ent. Mag. 57; TOTTENHAM, 1784.

*Hymenoptera*.—BOX 234, 235; †COCKERELL, 369; LYLE, 1141; MORLEY, 1249; PERKINS, 1359.

*Lepidoptera*.—FROHAWK, *Anosia plexippus*, p. 145; MATHEW p. 210 Entomol. 54; The Hope collection, notes continued, WOODFORD Entomol. 54 pp. 8, etc.

*Neuroptera*.—LUCAS, 1120.

*Diptera*.—BAGNALL & HARRISON, 84; †COCKERELL, 376; †COCKERELL & HAINES, 380; COLLIN, 381, 382; EDWARDS 537, 543.

*Hemiptera*.—BUTLER, 295; GREEN, 750; HARWOOD, 779; LAING, 1054; THEOBALD, 1751.

*Thysanoptera*.—BAGNALL, 83.

*Orthoptera*.—LUCAS, 1119; UVAROV, in greenhouse, 1821.

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*Insecta*.

Cheshire, agricultural land, BUCKLE, 283.

Clyde, additions, MURPHY & GORDON, Scottish Nat. 1921 p. 15 & 16; FERGUSON, T.c. p. 47, and p. 48.

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Yorkshire, FORDHAM, 646.

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Cambridge, *Gyrinus*, PEARCE p. 64 Ent. Mag. 57.

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Hexham, *Deliphrum crenatum*, WALSH p. 276 Ent. Mag. 57.

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Oxwich Bay, TOMLIN p. 277 Ent. Mag. 57.



Peebles, *Henoticus serratus*, BLACK  
p. 154 Ent. Mag. 57.

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54.

Rannoch, *Endectus whitei*, HARWOOD  
p. 233 Ent. Mag. 57.

Scotland, *Sitona*, JACKSON p. 178  
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Solway District, M'GOWAN, 1214.

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NICHOLSON p. 36 Ent. Mag. 57.

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57.

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57.

Yorkshire, *Heptaulacus villosus*,  
THOMPSON p. 207 Ent. Mag. 57.

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Carlingford, *Euryproctus buccatus*,  
JOHNSON p. 277 Ent. Mag. 57.

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Ent. Mag. 57.

Colchester, *Theronia atalantæ*, HAR-  
WOOD p. 148 Entomol. 54.

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& 51 Irish Nat. 30; Id., 906.—PHILLIPS,  
*Stenamma*, pp. 125-127 Irish. Nat. 30;  
*Donisthorpea* novelties, PHILLIPS T.c.  
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T.c. p. 146.

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HALLETT p. 210 Ent. Mag. 57.

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p. 61 Scott. Nat. 1921.

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& 143.

Berkshire, *P. c-album*, BOORNE p. 243  
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Brighton, *Papilio bianor*, BRAMWELL  
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54 p. 50.

Chilterns, *Agriades corydon syngrapha*,  
ROWLAND-BROWN p. 48 Entomol. 54.

Cornwall, *Rhopalocera*, CROFT Ent-  
tomol. 54 p. 20.

Cumberland, *Rhop.*, DAY Entomol. 54  
p. 99; id. *Porth. similis*, T.c. p. 219.

Dorchester, *Issoria lathonia* FORD  
p. 244 Entomol. 54.

Dover, *Lampides boeticus*, SLOPER  
p. 244 Entomol. 54.

Dorset, *V. antiopa*, BOND p. 243  
Entomol. 54.

Dublin, WALKER p. 62 Irish Nat. 30.  
—*L. sinapis*, STELFOX p. 97 Irish Nat.  
30.

Eastbourne, *D. pulchella*, PHILLY  
p. 270 Entomol. 54 p. 298; BROWN T.c.  
p. 298.

East Grinstead, *Vanessa antiopa*,  
HANBURY p. 236 Ent. Mag. 57.

Essex, *Col. agrammella*, THURNALL  
p. 219 Entomol. 54; *D. pulchella*,  
WRIGHTSON T.c. p. 292.

Filey, *Zygaena*, SMART Naturalist  
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Gloucestershire, CLUTTERBUCK, pp.  
117-119 Entomol. 54; *E. antiopa*,  
HESLOP T.c. p. 291.

Havant, *M. unionalis*, EASTWOOD  
p. 292 Entomol. 54.

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Huntingdon, *Platyptilia rhododacty-  
lus*, FRYER p. 220 Entomol. 54.

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pp. 44 & 45 Irish Nat. 30; GREER  
T.c. p. 63.

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*Lycaenidae*, RATTRAY pp. 296-298  
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Staffordshire, FRASER, 662.

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Sussex, *Margarodes unionalis*, ADKIN, p. 76 Entomol. 54; *E. antiopa*, HANBURY T.c. p. 267—Sussex, West, BIRD, Ent. Rec. 33 pp. 48-54; WOODFORD, pp. 119-121, *Rhop.* p. 197 Entomol. 54.

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#### *Neuroptera*.

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#### *Diptera*.

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Midlothian, *Anopheles plumbeus*, EVANS Scott. Nat. 1921 p. 186.

Pitlochry, *Oxycera dives*, CARTER p. 235 Ent. Mag. 57.—Pitlochry, *Diptera*, Id. l.c.

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Yorkshire, FORDHAM, 647.

#### *Paraneuroptera*.

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Beachy Head, *Archisotoma besselsi*, BROWN p. 19 Ent. Mag. 57.

Isle of Wight, Id. T.c. p. 143.

#### (e) Central and East Europe.

##### *Insecta*.

RUSCHKA und FULMEK, 1522; STERNON, Bull. ent. soc. Belge 3 p. 20; STEYER, 1668.

##### *Coleoptera*.

BOKOR, 208, 209; DREXLER, 483; FRENNET, 665; GAUD, 714; GSCHWENDTNER, 723; HEYROVSKÝ, 843; KOESTER, 977; KOLBE, 978; LOKAY, 1114, 1116; NETOLITZKY, 1305; OBENBERGER, 1323, 1324; OLSUFJEV, 1337; PLIGINSKIJ, 405; ROUBAL, 1508, 1509, 1511, 1512; SCHAUBERGER, 1540.

Belgium, BOVIE, Bull. ent. soc. Belg. 3 p. 33; BOVIE & CARPENTIER, p. 51 Ann. Soc. ent. Belgique 61; CARPENTIER, Bull. soc. ent. Belg. 3 p. 33; DORSSELAER, 470; FRENNET, 664 and Bull. ent. soc. Belg. 3 p. 99; GUILLEAUME, Ann. Soc. ent. Belgique 61 pp. 330 & 331.

Bohemia, HEYROVSKY, 846; ROUBAL Časopis 19 pp. 87-89, 89-90.

Denmark, HANSEN, 773.

Holland, EVERTS, 585; UYTENBOOGAART, 1824.

Germany, DELAHON, 431; ENGERT, D. ent. Zs. 1921 p. 272; HÖHNE, D. ent. Zs. 1921, p. 117; KOLBE, 979; KÜNNEMAN, 1033; LABLER, 1042; NERESHEIMER & WAGNER, 1303; REINECK, D. ent. Zs. 1921 p. 272; WRADATSCH, 1946.

Russia, BELJAEV, Government of Orel, 132; GORNOSTAEV, Government of Petrograd, 741; LUTSHNIK, 1126, 1132, 1133, 1134, 1135, 1138; PLAVIL-STSHIKOV, 1401; PLIGINSKY, Crimea, 1404; REICHARDT, 1450; SPESSIVTSEV, E. Russia, 1637.

#### Hymenoptera.

DUBOIS, 488; FREY-GESSNER, 671; KRAUSSE, 999; MAIDL, 1155; MÜLLER, 1279; STRAND, 1679, 1703, 1708.

Belgium, DUBOIS, *Crossocerus distinguendus*, p. 90 Ann. Soc. ent. Belgique 61; Id. *Tenthredinidae*, T.c. p. 329; Id. Bull. ent. soc. Belge 3 pp. 18, 46, 127; GOETGHEBUER, Bull. soc. ent. Belg. 3 p. 181.

Denmark, HENRIKSEN, 817.

Germany, DITTRICH, 460; FRIESE, 684; SCHIRMER, Brandenburg, 1547.

Holland, LINDEMANS, 1100; SMITS VAN BURGST, 1631.

Russia, BAROVSKY, 106; LUTSHNIK, Kiev, 1130.

#### Lepidoptera.

ALBRECHT, 13; BARGEN, 98; BECKER, 127; BROMBACHER, 261; BRYK, 275, 279; CLOSS, 364; FILIPPOV, 625; FRUHSTORFER 696, 698, 699, 700, 701, 702, 703; GRABE, 744; GUŚIĆ, 762; HOULBERT, 870; KHEIL, *Melitaea*, 939; MÜLLER, 1271; PESCHKE *Parnassius*, 1362; REISS, 1454, REUSS, 1461; SIEGEL, 1609; STAUDER, 1650, 1651, 1652, 1654; STAUDER & FELKEL, 1655; STERNECK, 1664; STRAND, 1690, 1708, 1709; VORBRODT, 1863; WARNECKE, 1876.

Belgium, SEYDEL, 1602.

Bohemia, BAT'A, 120.

Germany, BERTSCH, 180; DADD, 418; HEINRICH, D. ent. Zs. 1921 p. 278; HERING, 828, 830; HERRMANN Frankfort on Oder, 837; LANGE, 1066; PETRY, 1364; SCHOPFER, 1558; STEINMIG, D. ent. Zs. Iris. 34 p. 216, 1920; THURNER, 1760; UFFELN, 1795, 1796; WARNECKE, 1874.

Holland, OBEERTHÜR, 1329.

Switzerland, LACREUZE, 1047.

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#### Trichoptera.

Belgium, DELPÉRÉE, *Micrasema longulum*, p. 156 Ann. Soc. ent. Belgique 61; LESTAGE, 1089, 1091, 1092; Id. p. 331 Ann. Soc. ent. Belgique 61; Id. *Trienodes conspersa*, T.c. 243; Id. Bull. soc. ent. Belg. 3 p. 66, 89, 129.

Germany, ULMER, Bayern, 1807.

#### Diptera.

BAUDYS & WIMMER, 121, 122; CZIŻEK, 417; †ENDERLEIN, 563; KERTEST, 935; OLDENBERG, 1331, *Hilara* 1334; TIMM, 1775.

Belgium, GOETGHEBUER, 733, 734, 735; GOETGHEBUER & TONNOIR, Belgium, 736; SEVERIN, Belgium, 1600; TONNOIR, 1779, 1780; Id. *Simulium*, p. 50 Ann. Soc. ent. Belgique 61; Id. Bull. ent. soc. Belge. 3 p. 19, 21.

Germany, ECKSTEIN, 529; †EDWARDS, 532, 533; HERING, 830; RÜBSAAMEN, 1518; THIENEMANN, 1753.

Holland, DE MELJERE, 1216.

Moravia, LANDROCK, *Mycetophilidae* 1059, 1060, 1061.

Russia, STACKELBERG, Government of Petrograd, 1641.

#### Hemiptera.

HÖHNE, Germany, 858; KIRITSHENKO, 946, Russia 947, Crimea 948; SCHUMACHER, Germany, 1569; THOMSEN, 1759.

#### Thysanoptera.

Russia, IOHN, 885.

#### Plecoptera.

ŠÁMAL, 1531.

#### Paraneuroptera.

BARTENEV, Rostov on Don, 109, 112.

#### Orthoptera.

FRITZE, Hanover, 690; FRUHSTORFER, 695.

#### Protura.

HENRIKSEN, Denmark, 815.



(f) *France.*

*Insecta.*—ASHBY, Jura, Ent. Rec. 33 p. 195-199; BESTAL, 181.

*Coleoptera.*—ANTOINE, 63; BARTHE, 116, 117, 118; DES GOZIS, 440; DEVILLE, 442, 446; FAGNIOZ, 589; GAUDIN, 715; Id. p. 135 Bull. Soc. ent. France 1921; Id. T.c. p. 228; GAVOY, Pyrenees, 718; HOULBERT, 872; HUSTACHE, introduced *Ourculionidae*, p. 134 Bull. Soc. ent. France 1921; LESNE, 1084; MÉQUIGNON, 1219; PEYERIMHOFF, *Thyamis symphyti*, Bull. Soc. ent. France 1921 p. 216.

*Hymenoptera.* — BENOIST, 149; GAUTIER, 717.

*Lepidoptera.* — BETHUNE - BAKER, Digne, Ent. Rec. 33 p. 121, Mont Dore, T.c. p. 61-63, Alpes maritimes, T.c. pp. 185-188, Sainte Baume, T.c. pp. 101-104; GURNEY T.c. p. 133-184; DATTIN, *Conchylis sabulicola*, Bull. Soc. ent. France 1921 p. 25; DUMONT, 495; JOANNIS, 899; NÈGRE & PICARD, 1302; PEARSON, Pyrenees *Rhopalocera*, Ent. Rec. 33 pp. 7-10; WOODFORDE, Haute Saône, Ent. Mag. 57 pp. 51 & 52.

*Diptera.*—FALCOZ, 596; MERCIER, Calvados, Ann. Soc. ent. Belgique 61 pp. 162-164; PIERRE, 1385, 1386; SÉGUX, *Culicinae* 1583, 1586, 1587; TURINETTI, *Lonchaea aristella*, p. 195 Bull. Soc. ent. France 1921.

*Hemiptera.*—LALLEMAND, 1057.

*Orthoptera.*—VICHET, l'Herault, Bull. Soc. ent. France 1921 pp. 174-176.

(g) *South Europe and Mediterranean Basin.*

*Coleoptera.*—DEVILLE, Corsica, 443; FUENTE, 704, 705; KRAUSSE, 990, 998; MADER, Albania, 1153; MÜLLER, 1270; RAGUSA, 1436; SCHATZMAYR, *Exapion*, 1439.

N. Africa, ALFIERI, 41; AUZAT, 76; BAGNALL, 82; BEDEL, 130, 131; CHOBOUT, 355; CROS, 407, 409; DU BUYSSON, 492; FALCOZ, 595; NORMAND, 1318; PEYERIMHOFF, 1365, 1366, 1367.

*Hymenoptera.* — BENOIST, Morocco, 148; BERLAND, Macedonia, 171; FERTON, 621; FRIESE, Egypt, Tunis,

683; HABERMEHL, *Ichneumonidae*, 765; KRAUSSE, 990; SANTSCHI, N. Africa, 1536; STRAND, 1692, 1693, 1703, 1706.

*Lepidoptera.*—DRENOWSKY, Bulgaria, 481; Id. Macedonia, 482; GRAVES, *Rhopalocera*, 748; Id. Palestine, Ent. Rec. 33 p. 193-195; Id. Constantinople & Bithynia, T.c. p. 165; HAYWARD, Cyprus, *A. crataegi*, Entomol. 54 p. 219; KRAUSSE, 990; OBERTHÜR, 1327; QUEROI, Italy, Ent. Rec. 33 pp. 10-15, 25-29, 70-75; REISS, 1453; ROWLAND-BROWN, Macedonia *Rhop.*, Entomol. 54 p. 123; SCHAWERDA, 1545; SEABRA, 1581; STAUDER, Italy, 1647; Id. Illyro-Adriatic *Lepidoptera*, 1648; STERTZ, 1666; Id. Algeria, 1665; TURATI, Cyrenaica, 1792; VOGT, 1861.

*Neuroptera.*—LACROIX, N. Africa, 1049; NAVÁS, 1291; Id. N. Africa, 1297.

*Diptera.*—AUSTEN, Palestine, 75; BARRAUD, 107; KRÖBER, 1014; MALLOCH, Cyprus, 1163; MINOZZI, *Phoridae* 1241; PIERRE, Corsica, 1385; TONNOIR, Spain, 1777; N. Africa, BEZZI 183, 184; KIEFFER, 940, 941, 942; PARROT, 1348.

*Aphaniptera.*—WEISS, N. Africa, 1897.

*Hemiptera.*—N. Africa, BERGEVIN, 156, 157, 158, 159, 160, 162 and Bul. soc. hist. nat. Algiers 11 p. 77; HORVATH, 867.

*Thysanoptera.*—BAGNALL, Spain, 82; KRAUSSE, 990.

*Paraneuroptera.*—CAMPION, Macedonia, 314; KRAUSSE, 990; MARTIN, 1188.

*Orthoptera.*—CHOPARD, Crete, 361; KRAUSSE, 990, Sardinia 989; UVAROV, Macedonia, 1823.

(h) *Caucasus, West and Central Asia.*

*Insecta.*—MORTON, 1258; NEWTON, 1308.

*Coleoptera.* — BOGDANOV-KATJKOV, Persia, 207; BREIT, Bokhara, 241; GEBIEN, Aden, 720; KOZHANTSHIKOV, 986; LUTSHNIK, Caucasus, 1136, 1137; NOVAK, Asia Minor, 1320; OLSOUFIEV, 1336; WENDELER, 1913; ZIMMERMANN, Sinai, 1963.

*Hymenoptera*.—CARL, 320; FAHRINGER & FRIESE, 594; FRIESE, *Melittoides*, 683; MAIDL, 1155; MORICE, Mesopotamia, 1247; SEMENOV-TIAN-SHANSKIJ, 1593; STRAND, 1693, 1703.

*Lepidoptera*.—BETHUNE-BAKER, Persia, 182; Id. Caucasus, Ent. Rec. 33 p. 169; BUXTON, 298; FILIPJEV, Batum, 626; FILIPJEV & DJAKONOV, 627; HOULBERT, 870; JOHN, 901; OBERTHÜR, 1327; PEILE, Mesopotamia, 1356; PROUT, Mesopotamia, 1431; REISS, 1453; RILEY, 1476; ROTHSCHILD, Mesopotamia, 1506; STAUDER, Asia Minor, 1646; VENZMER, Asia Minor, 1839; WATKINS & BUXTON, Mesopotamia, 1887.

*Neuroptera*.—NAVÁS, 1292.

*Diptera*.—FREY, 669; KANDÉLAKI, 923; KRÖBER, 1013.

*Hemiptera*.—BERGROTH, 165; KIRIT-SHENKO, 949.

*Plecoptera*.—KLÁFALEK, 950.

*Ephemeroptera*.—MORTON, 1259.

*Paraneuroptera*.—BARTENEV, Persia, 108, Tiflis, 110.

*Orthoptera*.—BUXTON, Mesopotamia, 297; CHOPARD, Mesopotamia, 360; UVAROV 1812, 1813, 1814, 1816, 1818, 1820.

#### Africa.

*Coleoptera*.—AURIVILLIUS, 73; BÉ-NARD, 138, 139, 140, 141; BENDERITTER 143; BICKHARDT, *Histeridae*, 189, 190; BORCHMANN, *Othnius*, 220; BOUCOMONT, 225; BOURGOIN, 227, 228, 229; CHAMPION, 338, 341; DESBORDES, 439; FLEUTIAUX, 635; GEBIEN, 720; HORN, 866; KESSEL, 936; KOZHANTSHIKOV, 986; KRIESCHE, 1005; KUNTZEN, 1034, 1035; LABOISSIÈRE, 1043, 1044, 1055, 1046; LESNE, 1083; MARSHALL, 1178; MOSER, 1261, 1263; PIC, 1372, 1373, 1374, 1375, 1376, 1378.

*Hymenoptera*. — BISCHOFF, 195; CAMERON 310; COCKERELL, 370; EMERY, 558; ENDERLEIN, 564, 565; KRIEGER, 1004; MEYER, 1230; SANTSCHI, 1534; SCHULTHESS, *Polistes* 1560; SHESTAKOV, *Cerceris*, 1607; STRAND, 1676; 1688, 1696, 1703 WATERSTON, 1883.

*Lepidoptera*.—AURIVILLIUS, 73a; BRYK, 277; ELTRINGHAM, 552; HOL-  
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LAND, 859; JOICEY & TALBOT, 907, 908; JORDAN, 914; MARCUS, 1174; MEYRICK, 1232; OBERTHÜR, 1327; PROUT, 1429, 1430, 1432; RILEY, 1478; ROTHSCHILD, 1505; SCHMIDT, 1550; SCHULTZE, 1565, 1566, 1567; STRAND; 1674, 1677, 1678, 1685, 1689, 1691; TALBOT, 1739; WICHGRAF, 1921.

*Neuroptera*.—NAVÁS, 1290, 1291 1292.

*Diptera*.—ALEXANDER, 24, 26, 27 33, 34; BEQUAERT, 152; BEZZI, 185, 186; CARTER, 326; DYAR, 507; EDWARDS, 539; ENDERLEIN, 560; FELT, 608; KIEFFER, 943; KRÖBER, 1010, 1012, 1013, 1014, 1017, 1020; MALLOCH, 1163; RICARDO, 1472, 1473; SCHMIDT, 1556; SURCOUF, 1723 VILLENEUVE, 1854.

*Aphaniptera*.—WATERSTON, 1882.

*Hemiptera*.—LEHMANN, 1075; POPPIUS, 1409; POPPIUS & BERGROTH, 1410.

*Thysanoptera*.—BAGNALL, 82.

*Isoptera*.—FULLER, 706.

*Embiopoda*.—NAVÁS, 1291

*Plecoptera*.—LESTAGE, 1087.

*Ephemeroptera*.—ULMER, 1803.

*Paraneuroptera*. — MARTIN, 1189; RIS, 1484.

*Orthoptera*.—CARL, 319; UVAROV, 1811; WERNER, 1914.

#### Madagascar and Mascarene Islands.

*Insecta*.—EMMEREZ, 558.

*Coleoptera*.—HUSTACHE, 882; KUNTZEN, 1034; PIC, 1372, 1373, 1374, 1376.

*Hymenoptera*. — BEQUAERT, Seychelles, 153; CRAWLEY, Aldabra, 402; ENDERLEIN, 564; KRIEGER, 1004; SANTSCHI, 1534.

*Lepidoptera*.—JOICEY & TALBOT, Seychelles, 910; JORDAN, 913, 914; LATHY, 1070; LE CERF, 1074.

*Diptera*.—ALEXANDER, Madagascar, Reunion, 28.

*Hemiptera*.—GREEN & LAING, *Coccidae*, 751; POPPIUS & BERGROTH, *Heteroptera*, 1410.

*Thysanoptera*. — BAGNALL, Seychelles & Rodrigues, 81.

**Asia, Tropical and Eastern.**

*Insecta*.—ANNANDALE, 57; AYYAR, India, 77; BALLARD, India, 90; GHOSH, India, 724.

*Coleoptera*.—ACHARD, Tonkin, 2, 3; ANDREWES, 51, 52, 53, 54, 55, 56; ANNANDALE & DOVER, 58; ARROW, 68, 69; AURIVILLIUS, 73; BERGER & CHOLODKOVSKY, 155; BERLIOZ, 174; BERNHAUER, 177; BLAIR, 199; BORCHMANN, *Othnius*, 220; BOUCOMONT, India, 223; BOUCOMONT & GILLET, Indochina, 226; CALABRESI, 304; CAMERON, 307, 308; CHAMPION, 337, India 338, 339, Singapore 342, India 344, 345; DESBORDES, Indochina, 438; D'ORCHY-MONT, 1339; DOVER & RIBEIRO, 477; FLEUTIAUX, 638; GEBLEN, India, 720; HUSTACHE, Japan, 881; JUREČEK, Vladivostock, 919; KNISCH, 974; KOZHANTSHIKOV, 986; KRIESCHE, 1005; KURISAKI, 1037; LESNE, India, 1083; LUTSHNIK, Manchuria, 1129; MARSHALL, 1179; MAULIK, 1197, 1198, Malacca 1199; MOSER, 1261, 1263; PESCHET, 1361; PERKINS, 1358; PIC, 1372, 1373, 1374, 1376, 1377; PLAVILSTSHIKOV, 1403; SAMPSON, 1533; SPAETH, 1635; WASMANN, *Rhyssopaussidae*, 1878; WASMANN, Tonkin, 1880.

*Hymenoptera*.—AYYAR, 79; †COCKRELL, Burma, 373; DOVER, 472, 474; ENDERLEIN, 564; GRANDI, 746; KRIEGER, 1004; LYLE, 1140; MEYER, 1230; MAKAYAMA, Japan, 1288; ROHWER, India, 1494, 1495; SCHULTHESS, *Odynerus*, 1561; SEMENOV-TIAN-SHANSKIJ, 1593; SILVESTRI, 1614; STRAND, 1693, Formosa 1694, 1696; TIMBERLAKE, Formosa, 1774; VIEHMEYER, 1847; WHEELER, China, 1917, 1918.

*Lepidoptera*.—ANNANDALE & DOVER, 59; BELL, 133; CRAWFORD, 401; DUROIS & SALVAZA, 489; EVANS, 584; FELLOWES-MANSON, 605, 606; FIELD, 624; FRUHSTORFER, 691; HOULBERT, 870; JOICEY & TALBOT, 909, 910; MARTIN, Japan, 1185; MARUMO, 1190, 1191, *Notodontidae* 1192; NIEPELT, 1314, 1315; OLLENBACH, Burma, 1335; ORMISTON, Ceylon, 1342; PROUT, 1429; RILEY & GODFREY, Siam, 1479; SCRIBA, Japan, 1580; SENIOR-WHITE, 1596; STRAND, Formosa 1682, 1683, 1695, 1702; WILEMAN, 1922; WOODWARD, 1945.

*Trichoptera*.—NAVÁS, 1291.

*Neuroptera*.—DOVER, 476; ESBEN-PETERSEN, Japan, 575; NAVÁS, 1291, Yunnan 1292; ŠÁMAL, 1532.

*Diptera*.—ALEXANDER, 19, 20, 21, 32; BEZZI, Formosa 188; CARTER, Siam, 326; CHRISTOPHERS, India, 362; DOVER, 475; DYAR, China, 516; EDWARDS, 531, 534, 535, Formosa 536, 539, Japan 540; KERTESZ, 935; KRÖBER, 1014, 1015, 1018, 1020; MALLOCH, 1163; RICARDO, 1472, 1473; SENIOR-WHITE, Ceylon, 1597; SILVESTRI, 1614; SURCOUF, Laos, 1722; VILLENEUVE, Punjab, 1853; YAMADA, Japan, 1948.

*Hemiptera*.—AYYAR, India, *Coccidae*, 78; BERGROTH, *Heteroptera*, 165; BERGROTH, 170; CHOLODKOVSKY, 358; INSTANT, 459; FERRIS, 619; GREEN, *Coccidae*, India 749, Japan 750; MUIR, 1264; SILVESTRI, 1613.

*Thysanoptera*. — BAGNALL, 82; KARNY, 927; PRIESNER, 1426.

*Psocoptera*.—NAVÁS, 1291, Tonkin, 1296.

*Plecoptera*.—KLAPÁLEK, 951; NAVÁS, 1291.

*Ephemeroptera*.—DOVER, 476; LESTAGE, 1088.

*Paraneuroptera*.—FRASER, 657, 658, 659, 660, 661; LAIDLAW, 1052; MARTIN, 1189; TILLYARD, 1767.

*Orthoptera*.—CARL, 319; CAUDELL, 334; PYLNOV, N. Mongolia, 1434; UVAROV, India, 1810, 1822.

*Aptera*.—SILVESTRI, 1615.

**Asiatic Archipelago.**

Java to New Guinea, including Philippine Is.

*Coleoptera*.—ANDREWES, 56; BORCHMANN, *Othnius*, 219, 220; BOUCOMONT, 224; CALABRESI, *Stratiotrhina* 302, *Brenthidae* 303; CHAMPION, 337, 339; FISHER, Philippine Is., 630; FLEUTIAUX, Philippine Is., 636, 637, 638; HELLER, 814; KESSEL, 936; KLEINE, 955, 971, *Brenthidae* 957; KOZHANTSHIKOV, 986; KRIESCHE, 1005, 1006; MOSER, 1261, 1263; SAMPSON, 1533.



*Hymenoptera*.—DODD, Java, 463; ELLIOTT, 551; ENDERLEIN, 564; GRANDI, 746; KRIEGER, 1004; ROHWER, 1492, 1493, 1495, Philippine Is. 1491; STRAND, 1693; WATERSTON, 1881.

*Lepidoptera*.—FRUHSTORFER, 692; JOICEY & TALBOT, 910; JURRIANSE & LINDEMANS, 920; MARTIN, 1184; PROUT, 1429; TALBOT, 1738; WILMAN & SOUTH, 1923, 1924, 1925.

*Trichoptera*.—NAVÁS, Philippines, 1291.

*Diptera*.—EDWARDS, Sarawak, 531; FELT, 609; KERTESZ, 935; KIEFFER, Philippine Is., 945; KRÖBER, 1015; RIEDEL, 1474; SCHMITZ, 1555; SWELLENGREBEL, *Culicidae*, 1726.

*Hemiptera*.—BERGROTH, Borneo, 166; FUNKHOUSER, Philippine Is., 708; MORRISON, Philippine Is., 1254; UICHANCO, Philippine Is., 1800.

*Thysanoptera*.—KARNY, 927.

*Isoptera*.—LIGHT, Philippine Is., 1094, 1095.

*Plecoptera*.—KLAPALEK, 951.

*Paraneuroptera*. — CAMPION, 315; MARTIN, 1189.

*Orthoptera*.—CARL, 319; KARNY, Philippine Is., 925; WERNER, 1915.

*Aptera*.—SILVESTRI, 1615.

*Collembola*.—HANDSCHIN, 772.

#### Australia and Tasmania.

*Coleoptera*.—CARTER, 327, 328; FERGUSON, 617, *Acantholophus*, 616; KESSEL, 936; KRIESCHE, 1005; LEA, 1071, 1072, 1073; SLOANE, *Carabidae* 1627, *Cicindela* 1628; WASMANN, 1879.

*Hymenoptera*. — COCKERELL, 368; CRAWLEY, 402; DODD, 461, 464; GIRAULT, 731; GRANDI, 745; HACKER, 766; KRIEGER, 1004; STRAND, 1703.

*Lepidoptera*. — BRYK 272, 277; TURNER, *Hypsidæ*, *Anthelidæ*, 1793.

*Neuroptera*.—ŠÁMAL, 1532.

*Diptera*.—ALEXANDER, 25, 37; CARTER, 326; EDWARDS, 539, Tasmania 532; HARDY, 774; HILL, 850; KERTESZ, 935; KRÖBER, 1013, 1015, 1018; MALLOCH, 1163; SURCOUF, 1720.

*Hemiptera*.—MYERS, 1283; POPPIUS & BERGROTH, 1410; †TILLYARD, 1764, †1766.

*Thysanoptera*.—KARNY, 924, 926.

*Isoptera*.—HILL, 852, *Coptotermes* 851.

*Plecoptera*.—TILLYARD, 1762, 1763, 1765, 1768.

*Orthoptera*.—ALEXANDER, 17; CARL, 319; SJÖSTEDT, 1619.

#### North America.

*Insecta*.—BARBER, 97; BRITTON, 257; †COCKERELL, 378; CRIDDLE, Canada, 405; STRAND, Greenland, 1673; WEISS & WEST, 1907.

*Coleoptera*.—BEAULIEU, 125; BEAULNE, Canada, 126; BENICK, 147; BLAISDELL, 200, 201; BLATCHLEY, 202; BORCHMANN, *Ababa*, 220; BOWDITCH, 233; DAWSON, 428; FALL, 600; FISHER, 631; JOHNSON, 902; LILJEBLAD, 1096; MARES, 1175; NICOLAY, 1309; NOTMAN, 1319; SCHAEFFER, 1538; VAN ZURALEN-VENBURG, 1968; WADE, 1866; WEISS & LOTT, 1904; WOLCOTT, 1940.

*Hymenoptera*.—BANKS, 92; COCKERELL, 366, 367, 370, 372; CRAWFORD, 400; CUSHMAN, 414, 415; ENDERLEIN, 564; FRISON, 689; GAHAN, 709; MACGILLIVRAY, 1148, 1149, 1150; ROHWER, 1495, 1497; VIERECK, 1848, 1849, 1851; WELD, 1098; WELLS, 1911; WELLS & METCALF, 1912; WHEELER & TAYLOR, 1919.

*Lepidoptera*.—BARNES & LINDSEY, 101, 102, 103, 105; BIRD, 193; BIRD & JONES, 194; BOWMAN, Alberta additions, Canad. Ent. 53 pp. 13, 211-212; BRAUN, 236, 238; BRYK, 279; DIETZ, 454; DYAR, 505, 508, 515, 521, 523; ENGLEHARDT, 566; FOX, 653; HILL, 847; LEUSSLER, Nebraska, *Gonepteryx clorinde*, Ent. News 32 p. 201; LINDSEY, Iowa, 1101; McDUNNOUGH, 1206, 1207, 1208, 1211, 1212, 1213; REVERDIN, 1469; SKINNER, 1624, 1625; STONE, 1671; STRAND, 1684; WATSON, 1888; WRIGHT, 1947.

*Trichoptera*.—LLOYD, 1108.

*Diptera*.—ALDRICH, 15, 16; ALEXANDER, 23, 35; BRIMLEY, 255; CRESSON, 403; CURRAN, 412, 413; DIETZ,

451, 452, 453; DYAR, 501, 502, 504, 509, 513; DYAR & LUDLOW, 506; ENDERLEIN, 560; FELT, 610, 611; GREENE, 752, 754; JOHANNSEN, 900; JOHNSON, 904, 905; KRÖBER, 1009, 1011, 1014, 1016, 1017, 1020; MALLOCH, 1158, 1161, 1164, 1167; MCATEE, 1202, 1203, 1204; McDUNNOUGH, 1210; TOTHILL, 1783; VAN DUZEE, 1833; VAN DUZEE, COLE & ALDRICH, 1834; WELLS, 1911.

*Aphaniptera*.—CHAPIN, 349.

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*Furchadaspis* gen. n. *Diaspidinae* pp. 310 and 358 type *zamia* Morg. Europe N. Amer., MACGILLIVRAY T.c.

*Fusilaspis* gen. n. *Diaspidinae* pp. 275 and 289 type *phymatodidis* Mask. Australia, MACGILLIVRAY T.c.

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*Gonaspidiotus* gen. n. *Diaspidinae* pp. 390 and 431 type *minimus* Leon. Italy, MACGILLIVRAY T.c.

*Gramenaspis* gen. n. *Diaspidinae* pp. 309 and 353 type *africana* Newst., MACGILLIVRAY T.c.

*Graphaspis* gen. n. *Diaspidinae* pp. 310 and 359 type *permutans* Green Ceylon, MACGILLIVRAY T.c.

*Greenacoccus* n.n. for *Greenella* p. 474, MACGILLIVRAY T.c.

*Greenaspis* gen. n. *Diaspidinae* pp. 307 and 339 type *elongata* Green Ceylon, MACGILLIVRAY T.c.

*Greeniella* gen. n. *Monophlebinae* pp. 70 and 75 type *stebbingii* Green India, MACGILLIVRAY T.c.

*Greenoidea* gen. n. *Diaspidinae* pp. 392 and 446 type *phyllanthi* Green Ceylon, MACGILLIVRAY T.c.

*Hemaspidis* n.n. for *Hemiaspis* p. 474, MACGILLIVRAY T.c.

*Hemiaspis* gen. n. *Diaspidinae* pp. 275 and 291 type *hemichionaspiformis* Green N. Australia, MACGILLIVRAY T.c.

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*Inciaspis* gen. n. *Diaspidinae* pp. 311 and 361 type *pugionifera* Lindgr. S. Africa, MACGILLIVRAY T.c.

*Ischnaforinia* gen. n. *Diaspidinae* pp. 372 and 378 type *bambusae* Mask. China, MACGILLIVRAY T.c.

*Kuwanaspis* gen. n. *Diaspidinae* pp. 311 and 361 type *hikosani* Kuw. Japan, MACGILLIVRAY T.c.

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*Lecanium lichenoides* sp. n. England imported from Japan, GREEN p. 257 figs. Ent. Mo. Mag. 57.

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*Leonardaspis* gen. n. *Diaspidinae* pp. 274 and 287 type *wilga* Leon. Australia, MACGILLIVRAY The Coccidae 1921.

*Leonardianna* gen. n. *Diaspidinae* pp. 393 and 450 type *pimentae* Newst. Jamaica, MACGILLIVRAY T.c.

*Lepidaspis* gen. n. *Diaspidinae* pp. 275 and 292 type *uniloba* Knw. Japan, MACGILLIVRAY T.c.

*Lepidosaphes tubulorum* sp. n. Formosa p. 216 fig., FERRIS Bull. ent. Res. 12.—*L. pseudothesperidum, tuberculatus* fig., p. 108, *ulmi* fig. p. 109, GREEN Ent. Mo. Mag. 57.

*Ligulaspis* gen. n. *Diaspidinae* pp. 388 and 423 type *janeirensis* Hemp. Brazil, MACGILLIVRAY The Coccidae 1921.

*Lindigaspis* gen. n. *Diaspidinae* pp. 388 and 422 type *samoana* Lindgr., MACGILLIVRAY T.c.

*Lindingeria* gen. n. *Diaspidinae* pp. 248 and 254 type *aberemoae* Lindgr. Brazil, MACGILLIVRAY T.c.

*Lineaspis* gen. n. *Diaspidinae* pp. 308 and 339 type *striata* Newst. Algeria, MACGILLIVRAY T.c.

*Marchalaspis* gen. n. *Diaspidinae* pp. 312 and 363 type *vuilleti* Marchal Guinea, MACGILLIVRAY T.c.

*Marlattaspis* gen. n. *Diaspidinae* pp. 387 and 406 type *implicatus* Mask. China, MACGILLIVRAY T.c.

*Maskellanna* gen. n. *Diaspidinae* pp. 276 and 296 type *beyeriae* Green Australia, MACGILLIVRAY T.c.

*Matsucoccus* gen. n. p. 15 pl. iii, *acalyptus* sp. n. U. S. p. 20, HERBERT P. ent. Soc. Washington 23.

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*Monaonidiella* gen. n. *Diaspidinae* pp. 392 and 445 type *ceratus* Mask. Australia, MACGILLIVRAY T.c.

*Natalaspis* gen. n. *Diaspidinae* pp. 309 and 354 type *simplex* Brain Natal, MACGILLIVRAY T.c.

*Neogreenia* n.n. for *Paragreenia* p. 474, MACGILLIVRAY T.c.

*Neoleonardia* gen. n. *Diaspidinae* pp. 392 and 446 type *extensa* Mask. Australia, MACGILLIVRAY T.c.

*Neomorgania* gen. n. *Diaspidinae* pp. 394 and 458 type *acaciae* Morgan N.S.W., Tasmania, MACGILLIVRAY T.c.

*Neosignoretia* gen. n. *Diaspidinae* pp. 389 and 424 type *yuccae* Ckll. Mexico, MACGILLIVRAY T.c.

*Newsteadidiella* gen. n. *Monophlebinae* pp. 71 and 75 type *formicarum* Newst. India, MACGILLIVRAY T.c.

*Niveaspis* gen. n. *Diaspidinae* pp. 276 and 296 type *argentata* Ckll. Brazil, Mexico, MACGILLIVRAY T.c.

*Nudachaspis* gen. n. *Diaspidinae* pp. 312 and 365 type *fodiens* Green Ceylon, MACGILLIVRAY T.c.

*Obtuctaspis* gen. n. *Diaspidinae* pp. 311 and 361 type *lobata* Ferris New Mexico, MACGILLIVRAY T.c.

*Obtusaspis* gen. n. *Diaspidinae* pp. 393 and 450 type *rhizophilus* Newst. B.E. Africa, MACGILLIVRAY T.c.

*Octaspidiotus* gen. n. *Diaspidinae* pp. 387 395 and type *subrubescens* Mask. Australia, MACGILLIVRAY T.c.

*Parachionaspis* gen. n. *Diaspidinae* pp. 309 and 354 type *galliformens* Green Ceylon, MACGILLIVRAY T.c.

*Paraflorinia* gen. n. *Diaspidinae* pp. 372 and 378 type *rubra* Mask. Australia, MACGILLIVRAY T.c.

*Paragreenia* gen. n. *Kuwaniinae* p. 78, type *zeylanica* Green, MACGILLIVRAY T.c.

*Paralecanium ovatum* p. 671, *vacuum* p. 674, spp. n., Singapore, MORRISON Philip. J. Sci. 18.

*Paranewsteadia* gen. n. *Diaspidinae* pp. 391 and 432 type *maculata* Newst. Africa, MACGILLIVRAY The Coccidae 1921.

*Paraonidia* gen. n. *Diaspidinae* pp. 394 and 454 type *malleolus* Green Ceylon, MACGILLIVRAY T.c.

*Paraonidiella* gen. n. *Diaspidinae* pp. 392 and 442 type *cladii* Mask. Australia, S. Africa, MACGILLIVRAY T.c.

*Parischnaspis* gen. n. *Diaspidinae* pp. 276 and 295 type *spatulata* Lindgr. India, MACGILLIVRAY T.c.

*Parrottia* gen. n. *Diaspidinae* pp. 394 and 458 type *moorei* Green India, MACGILLIVRAY T.c.

*Partargionia* gen. n. *Diaspidinae* pp. 394 and 458 type *artocorpi* Green India, MACGILLIVRAY T.c.

*Pelomphala* gen. n. *Diaspidinae* pp. 392 and 441 type *lilacinus* Ckll. New Mexico, MACGILLIVRAY T.c.

*Pinnaspis simplex* sp. n. China p. 214 fig., FERRIS Bull. ent. Res. 12.

*Platylecanium asymmetricum* sp. n. Singapore p. 667, MORRISON Philip. J. Sci. 18.

*Poliaspoides* gen. n. *Diaspidinae* pp. 309, 357 type *simplex* Green Ceylon, MACGILLIVRAY The Coccidae 1921.

*Proceraspis* gen. n. *Diaspidinae* pp. 312 and 363 type *cinnamomi* Green Ceylon, MACGILLIVRAY T.c.

*Prontaspis* gen. n. *Diaspidinae* pp. 311 and 359 type *citri* Comst., MACGILLIVRAY T.c.

*Pseudaonidia iota, aldabracae*, spp. n. Seychelles p. 125, figs., GREEN & LAING Bull. ent. Res. 12.

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*Pseudoulacaspis* gen. n. *Diaspidinae* pp. 305 type *pentagona* Targ., MACGILLIVRAY T.c.

*Pseudococcus maritimus* = (*Longispinus latipes* Gr.) p. 151 figs., *paludinus* sp. n. England p. 190 figs., GREEN Ent. Mo. Mag. 57.—*Ps. hispidus* sp. n. Singapore p. 644, figs., MORRISON Philip. J. Sci. 18.

*Pygalataspis* gen. n. near *Odonaspis, miscanthi* sp. n. Formosa fig., FERRIS p. 218 Bull. ent. Res. 12.

*Pygidiaspis* gen. n. *Diaspidinae* pp. 392 and 447 type *cedri* Green Australia, MACGILLIVRAY The Coccidae 1921.

*Quadraspidiotus* gen. n. *Diaspidinae* pp. 388 and 409 type *ostreaeformis* Curt, MACGILLIVRAY T.c.

*Remotaspidiotus* gen. n. *Diaspidinae* pp. 391 and 434 type *chenopodii* Marl. N.S.W., MACGILLIVRAY T.c.

*Remotaspis* gen. n. *Diaspidinae* pp. 311 and 360 type *dentilobis* Newst. Uganda, MACGILLIVRAY T.c.

*Rhizaspidiotus* gen. n. *Diaspidinae* pp. 390 and 430 type *helianthi* Parrott Kansas, MACGILLIVRAY T.c.

*Ripersia scirpi* sp. n. England p. 192 figs., GREEN Ent. Mo. Mag. 57.

*Rugaspidiotus* gen. n. *Diaspidinae* pp. 393 and 449 type *arizonica* Ckll., MACGILLIVRAY The Coccidae 1921.

*Rutherfordia* gen. n. *Diaspidinae* pp. 306 and 323 type *malloti* Ruth, Ceylon, MACGILLIVRAY T.c.

*Sclopetaspis* gen. n. *Diaspidinae* pp. 307 and 324 type *laniger* Newst. Java Africa, MACGILLIVRAY T.c.

*Scobinaspis* gen. n. *Diaspidinae* pp. 274 and 286 type *serrifrons* Leon. Italy, MACGILLIVRAY T.c.

*Scrupulaspis* gen. n. *Diaspidinae* pp. 274 and 287 type *intermedia* Mask. New Zealand, MACGILLIVRAY T.c.

*Semelaspidus* gen. n. *Diaspidinae* pp. 393 and 451 type *fistuloides* Green Ceylon, MACGILLIVRAY T.c.

*Separaspis* gen. n. *Diaspidinae* pp. 390 and 427 type *proteae* Brain Transvaal, MACGILLIVRAY T.c.

*Sinistraspis* gen. n. *Diaspidinae* pp. 309 and 353 type *unilateralis* Newst. Barbados, MACGILLIVRAY T.c.

*Situlaspis* gen. n. *Diaspidinae* pp. 311 and 361 type *condaliae* Ferris Arizona, MACGILLIVRAY T.c.

*Spinaspidiotus* gen. n. *Diaspidinae* pp. 390 and 428 type *fissidens* Lindgr. S. Africa, MACGILLIVRAY T.c.

*Stringaspidiotus* gen. n. *Diaspidinae* pp. 393 and 451 type *curculiginis* Green Java, MACGILLIVRAY T.c.



*Targaspidiotus* gen. n. *Diaspidinae* pp. 392 and 446 type *Fuccarum* Kll. New Mexico Arizona, MACGILLIVRAY T.c.

*Targionidea* gen. n. *Diaspidinae* pp. 393 and 449 type *campylanthi* Lindgr. Canary Is., MACGILLIVRAY T.c.

*Temnaspidiotus* gen. n. *Diaspidinae* pp. 387 and 403 type *excisus* Green Ceylon, MACGILLIVRAY T.c.

*Tenuiaspis* gen. n. *Diaspidinae* pp. 308 and 339 type *minuta* Green Ceylon, MACGILLIVRAY T.c.

*Tollaspidiotus* gen. n. *Diaspidinae* pp. 389 and 425 type *mauritanus* Newst., MACGILLIVRAY T.c.

*Triaspidis* gen. n. *Diaspidinae* pp. 273 and 276 type *bicornis* G. & L. Australia, MACGILLIVRAY T.c.

*Truncaspidiotus* gen. n. *Diaspidinae* pp. 390 and 431 type *capensis* Walk. S. Africa, MACGILLIVRAY T.c.

*Umbaspis* gen. n. *Diaspidinae* pp. 306 and 323 type *regularis* Newst. Uganda, MACGILLIVRAY T.c.

*Unachionaspis* gen. n. *Diaspidinae* pp. 307 and 337 type *colemani* Knw. Japan, MACGILLIVRAY T.c.

*Unaspidiotus* gen. n. *Diaspidinae* pp. 387 and 405 type *corticis-pini* Lindgr. Japan, MACGILLIVRAY T.c.

*Unaspis* gen. n. *Diaspidinae* pp. 308 and 339 type *acuminata* Green Ceylon, MACGILLIVRAY T.c.

*Ungulaspis* gen. n. *Diaspidinae* pp. 274 and 286 type *ungulata* Green Java, MACGILLIVRAY T.c.

*Varicaspis* gen. n. *Diaspidinae* pp. 390 and 431 type *florineides* Newst. Uganda, MACGILLIVRAY T.c.

*Versiculaspis* gen. n. *Diaspidinae* pp. 312 and 364 type *diosmae* Brain S. Africa, MACGILLIVRAY T.c.

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†*Lophioneura* gen. n. *LOPHIONEURIDAE* fam. n. p. 417, *ustulata* sp. n. Newcastle N.S.W. p. 418 pl. xxv f.2 text-fig 3, TILLYARD Proc. Linn. Soc. N. S. Wales 46.

†*MESOGEREONIDAE* fam. n. p. 272, TILLYARD Proc. Linn. Soc. N. S. Wales 46.

†*Mesogereon superbum* p. 274, *compressum*, *affine* p. 277, *shepherdi* p. 279 plates and text-figs., spp. n., Queensland Mesozoic, TILLYARD Proc. Linn. Soc. N. S. Wales 46.

†*Mitchelloneura* gen. n. *PROSBOLIDAE* p. 414, *permiana* sp. n. Newcastle N.S.W. p. 416 pl. xxxv f. 1 text-fig. 1, TILLYARD Proc. Linn. Soc. N. S. Wales 46.

†*PALAEONTINIDAE* related to *Mesogereon* pp. 281-283, TILLYARD Proc. Linn. Soc. N. S. Wales 46.

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*Enderleinellus tamiasis* sp. n. from *Tamias striatus* p. 27 text-fig. 22, FAHRENHOLZ Arch. Natg. 81 Abt. A Heft 11.

*Haematopinus neumanni* from *Buffetus brachyceros* p. 8, *quadripertusus* p. 19 text-figg. 17-19, *parviprocursus* p. 21, *elegans* p. 22 pl. fig. 8 text-fig. 18, spp. n., Africa, *bufali* p. 7 pl. fig. 3 text-figg. 8-10, FAHRENHOLZ Arch. Natg. 81 Abt. A Heft 11.

*Hoplopleura acanthopus* var. *aequidentis* from *Arvicola subterraneus*, a. var. *edentulus* from *Mus rutilus* p. 26 text-fig. 21 varr. n., FAHRENHOLZ Arch. Natg. 81 Abt. A Heft 11.—*H. neumanni* sp. n. Abyssinia p. 25, FAHRENHOLZ Jahresber. nathist. Ges. Hannover 62-68 1919 Zool.

*Linognathus binipilosus* sp. n. from *Reducina* sp. p. 11 pl. figg. 4, 5, textfigg. 11-13, FAHRENHOLZ Arch. Natg. 81 Abt. A Heft 11.—*L. burmeisteri* nom. n. for *Pediculus crassicornis* N. p. 23, *setosus* application of name p. 23, *ferrisi* nom. n. for *Cervophthirius crassicornis* Ferris p. 24, Id. Jahresber. nathist. Ges. Hannover 62-68 1919 Zool.

*Lutequs* gen. n. type *L. pectinifer* Neum. p. 32, FAHRENHOLZ Arch. Natg. 81 Abt. A Heft 11.

*Microthoracius* gen. n. type *Linognathus praelongiceps* Neum. p. 30, FAHRENHOLZ Arch. Natg. 81 Abt. A Heft 11.

*Neohaematopinus macrospinosus* nom. n. for *Haematopinus antennatus* Osborn p. 24, FAHRENHOLZ Jahresber. nathist. Ges. Hannover 62-68 1919 Zool.

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*Neumannellus* gen. n. type *N. aulacodi* Neum. p. 31, FAHRENHOLZ Arch. Natg. 81 Abt. A Heft 11.

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*Acrothrips* gen. n., *serez* sp. n. Australia p. 43, KARNY Časopis 17.

*Adiaphorothrips elephas*, *dracon*, *camelus* spp. n. Australia p. 43, KARNY Časopis 17.—*A. brevis* sp. n. Seychelles p. 276 pl. iv f. 6, BAGNALL Ann. Nat. Hist. 7.

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*Anaphothrips theiperdus* p. 69, *theivorus* p. 72, *theifolii* p. 75 spp. n. Java, KARNY Treubia Buitenzorg 2.

*Aspidothrips* gen. n. p. 38, *platygaster* sp. n. Australia p. 39, KARNY Časopis 17.

*Bactridothrips serraticornis* sp. n. Ceylon p. 397, BAGNALL Ann. Nat. Hist. 8.

*Bactrothrips* = (*Krinothrips* B.), BAGNALL p. 396 Ann. Nat. Hist. 8.

*Bagnalliella* gen. n. type *Cephalothrips yuccae* Hinds, *cestosa* sp. n. Australia p. 41, KARNY Časopis 17.

*Brachyurothrips* gen. n. near *Panchaetothrips*, *anomalus* sp. n. Seychelles pl. iv figs. 3-5, BAGNALL p. 265 Ann. Nat. Hist. 7.

*Bregmatothrips theifloris* sp. n. Java p. 66, KARNY Treubia Buitenzorg 2.

*Coenurothrips* gen. n. near *Acallurothrips*, *brevicollis*, p. 271 pl. v figs. 5 & 6, *validus* p. 272 pl. vi figs. 4 & 5, spp. n. Seychelles, BAGNALL Ann. Nat. Hist. 7.—*C. affinis* sp. n. Ceylon p. 361, BAGNALL. T.c.—*C. minor* sp. n. Rodrigues p. 387, BAGNALL. T.c.

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*Aeolopus burri* sp. n. Macedonia p. 155, UVAROV Ent. Rec. 33.

*Aerochoreutes* gen. n. (type *Oedipoda carliniana* Thomas) p. 172, *strepitus* subsp. n., p. 174 Nevada, REHN Trans. Amer. ent. soc. 47.

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*Asoramea* gen. n. p. 130, *erythroptera* sp. n. p. 131 pl. vii f. 4 4A Australia, SJÖSTEDT T.C.

*Aswatthamanus cylindricus* K. = (*Lefroya acutipennis* K.), UVAROV p. 482 Ann. Nat. Hist. 7.

*Aulacobothrus bolivari* sp. n. Bengal p. 483, *luteipes* W. (as *Stenobothrus*) = (*taeniatus* Bol.), *decisus* W. = (*socius* Bol.), p. 482, UVAROV Ann. Nat. Hist. 7.—*A. africanus* p. 370, *A. ? crassipes* p. 371, spp. n., S. Africa, UVAROV Ann. Nat. Hist. 8.

*Austrobothrus* gen. n. p. 33, *ustatus* p. 34 pl. i f. 13 sp. n. Australia, SJÖSTEDT Stockholm Vet.-Ak. Handl. 62 No. 3.

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*Azelota ochracea* p. 220, *pallida* p. 221 pl. xiv f. 10, spp. n., Australia, SJÖSTEDT T.c.

*Beplessia* gen. n. p. 120, *rubrotuberculata* p. 121 pl. vi f. 1-2, *fulvescens* p. 122 pl. vi f. 3-4, spp. n. Australia, SJÖSTEDT T.c.

*Bermius curvicercus* sp. n. p. 97 pl. iii f. 18 Australia, SJÖSTEDT Stockholm Vet.-Ak. Handl. 62 No. 3.

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*Brachyexarna* gen. n. *lobipennis* sp. n. pl. xiv f. 13A 13B 13C 13D p. 224 Australia, SJÖSTEDT Stockholm Vet.-Ak. Handl. 62 No. 3.

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*Ceracris nigricornis* W. = (*versicolor* Br., W.) p. 485, *decolorata* Br. = (*cinctalis* K.) p. 486, UVAROV Ann. Nat. Hist. 7.

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*Circotettix coconino* p. 187 Arizona, *crotalum* p. 191 Nevada, spp. n., *rabula* subsp. n. *altior* p. 183 New Mexico, REHN Trans. Amer. ent. soc. 47.

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*Collitera* gen. n. p. 205, *variegata* sp. n. p. 206 pl. xiii f. 11 Australia, SJÖSTEDT T.c.



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*Cuparessa* gen. n. *testacea* sp. n. Australia, p. 130, pl. vii f. 3, SJÖSTEDT Stockholm Vet.-Ak. Handl. 62 No. 3.

*Cuprascula* gen. n. *corallipes* sp. n. Australia, p. 204 pl. xiii f. 9, SJÖSTEDT Stockholm Vet.-Ak. Handl. 62 No. 3.

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*Faureia* gen. n. p. 389 *Scyllinae*, *rosea* sp. n. Pretoria p. 391 fig. 4, UVAROV Ann. Nat. Hist. 8.

*Fipurga* gen. n. *crassa* sp. n. Australia p. 241, pl. xv f. 2, 2a, SJÖSTEDT Stockholm Vet.-Ak. Handl. 62 No. 3.

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*Pamphagus marmoratus* var. n.  
*elegans* Sardinia p. 68, KRAUSSE Arch.  
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*Stenobothrus* *lineatus* ff. n. *interposita*, *myrina* Switzerland p. 108, FRUHSTORFER Arch. Natg. 76 Abt. A Heft 5.

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# XII. PROCHORDATA

INCLUDING

ENTEROPNEUSTA AND PTEROBRANCHIA

BY

J. R. NORMAN.

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BY

J. R. NORMAN.

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# XIV. REPTILIA AND BATRACHIA

ARRANGED BY

JOAN B. PROCTER.

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W. L. SCLATER, M.A.

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# XVI. MAMMALIA

ARRANGED BY

MARTIN A. C. HINTON.

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# LIST OF ABBREVIATIONS WITH TITLES OF JOURNALS CONTAINING PAPERS DEALING WITH MATTERS OF ZOOLOGICAL IMPORTANCE.

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- Aarsb. Selsk. Norsk Fiskerier Frem.*, Bergen.—Aarsberetning. Selskapet for de Norske Fiskeriers Fremme. Bergen. — Nor.
- Abh. Ak. Wiss., Berlin.*—Abhandlungen der kgl. Akademie der Wissenschaften zu Berlin. Berlin. — Ger.
- Abh. bayer. Ak. Wiss., München.*—Abhandlungen der bayerischen Akademie der Wissenschaften. München. — Ger.
- Abh. D. Seefischereiver., Berlin.*—Abhandlungen des deutschen Seefischereivereins. Berlin. — Ger.
- Abh. geol. Landesanst., Berlin.*—Abhandlungen der kgl. preussischen geologischen Landesanstalt. Berlin. — Ger.
- Abh. geol. Landesanst., Darmstadt.*—Abhandlungen der grossherzoglich hessischen geologischen Landesanstalt zu Darmstadt. Darmstadt. — Ger.
- Abh. Geol. RchsAnst., Wien.*—Abhandlungen der k. k. Geologischen Reichs-Anstalt. Wien. — Aus.
- Abh. Ges. Wiss., Göttingen.*—Abhandlungen der kgl. Gesellschaft der Wissenschaften zu Göttingen. Berlin. — Ger.
- Abh. Ges. Wiss., Leipzig.*—Abhandlungen der kgl. sächsischen Gesellschaft der Wissenschaften. Leipzig. — Ger.
- Abh. Heidelberg Ak. Wiss.*—Abhandlung der Heidelberger Akademie der Wissenschaften. Heidelberg. — Ger.
- Abh. Mus. Natk., Magdeburg.*—Museum für Natur- und Heimatkunde zu Magdeburg. Abhandlungen und Berichte. Magdeburg. — Ger.
- Abh. natf. Ges., Görlitz.*—Abhandlungen der naturforschenden Gesellschaft zu Görlitz. — Ger.
- Abh. natf. Ges., Halle.*—Abhandlungen der naturforschenden Gesellschaft zu Halle. Halle. — Ger.
- Abh. nathist. Ges., Nürnberg.*—Abhandlungen der naturhistorischen Gesellschaft zu Nürnberg. — Ger.
- Abh. natw. Ver., Bremen.*—Abhandlungen, hrsg. v. naturwissenschaftlichen Verein zu Bremen. — Ger.
- Abh. natw. Ver., Hamburg.*—Abhandlungen aus dem Gebiete der Naturwissenschaften, hrsg. vom naturwissenschaftlichen Verein in Hamburg. — Ger.
- Abh. Schweiz. Pal. Ges., Basel.*—Abhandlungen der schweizerischen paläontologischen Gesellschaft. Mémoires de la Société paléontologique suisse. Basel und Genf. 4to. — Swi.
- Abh. Senckenb. Ges., Frankfurt a. M.*—Abhandlungen hrsg. v. d. Senckenbergischen naturforschenden Gesellschaft. Frankfurt a. M. — Ger.
- Abh. Ver. Natk., Cassel.*—Abhandlungen und Bericht des Vereins für Naturkunde zu Cassel. Cassel. — Ger.
- Abh. zool. Mus., Dresden.*—Abhandlungen und Berichte des kgl. zoologischen und anthropologisch-ethnographischen Museums zu Dresden. Leipzig. — Ger.

- Abh. ZoolBot. Ges., Wien.*—Abhandlungen der Zoologisch-botanischen Gesellschaft in Wien. Jena. — Aus.
- Abstr. Papers and Rep. Brighton., Nat. Hist. Soc.*—Abstract of Papers and Report of the Brighton and Hove Natural History and Philosophical Society, Brighton. — U.K.
- Act. Acad. Nac. Cien., Cordoba.*—Actas de la Academia Nacional de Ciencias en Cordoba. — Arg.
- Act. Com. Univ. Dorpat., Tatu (= Dorpat).*—Acta et Commentationes Universitatis Dorpatensis, Tartu (= Dorpat), Esthonia.
- Act. Mus. hist. nat., Rouen.*—Actes du Muséum d'histoire naturelle. Rouen (Seine-Inférieure). — Fr.
- Act. Soc. Chile, Santiago.*—Actes de la Société scientifique du Chile, Santiago. — Chile.
- Act. Soc. Fauna et Fl. Fenn, Helsingfors.*—Acta Societatis pro Fauna et Flora Fennica. Helsingfors. — Fin.
- Act. Soc. helvét. Sci. Nat., Genève.*—Actes de la Société helvétique des sciences naturelles. Genève. — Swi. vide Verh. Schweiz. Natf. Ges.
- Act. soc. linn., Bordeaux.*—Actes de la société linnéenne de Bordeaux (Gironde). — Fr.
- Act. Soc. Sc. Fenn. Helsingfors.*—Acta Societatis Scientiarum Fennicae. Helsingfors. 4to. — Fin.
- Act. Univ., Lund.*—Acta Universitatis Lundensis.—Lunds Universitets Arsskrift. Lund. 4to. — Swe.
- Act. Zool., Stockholm.*—Acta Zoologica: Internationell Tidskrift för Zoologica. Stockholm. — Swe.
- Agric. Gaz. Canada, Ottawa.*—The Agricultural Gazette of Canada. Department of Agriculture, Ottawa. — Can.
- Agric. Gaz., Sydney.*—Agricultural Gazette of New South Wales, Sydney. — Australia.
- Agric. J. Ind., Calcutta.*—The Agricultural Journal of India, Calcutta. — Ind.
- Akad. Ert., Budapest.*—Akademiai Ertesitő, Budapest. [Akademischer Anzeiger, Budapest.] — Hun.
- Allatt. Közlem., Budapest.*—Állattani Közlemények, Budapest. [Zoologische Mittheilungen, Budapest.] — Hun.
- Amer. Breed. Mag., Washington.*—The American Breeders' Magazine, Washington, D.C. — U.S.
- Amer. Geol., Minneapolis.*—American Geologist, Minneapolis, Minnesota. — U.S.
- Amer. J. Anat., Philadelphia.*—The American Journal of Anatomy, published by the Wistar Institute of Anatomy and Biology, Philadelphia, Pa. [Includes Proc. Ass. Amer. Anat.] — U.S.
- Amer. J. Physiol., Baltimore.*—American Journal of Physiology, Baltimore. — U.S.
- Amer. J. Sci., New Haven, Conn.*—American Journal of Science, New Haven, Conn. — U.S.
- Amer. J. Tropical Med., Baltimore.*—The American Journal of Tropical Medicine, Baltimore Md. — U.S.
- Amer. Midl. Nat., Notre Dame, Indiana.*—The American Midland Naturalist, devoted to Natural History, primarily that of the Prairie States. Published by the University of Notre Dame, Notre Dame, Indiana. — U.S.



- Amer. Mus. Novit., New York.*—American Museum Novitates. New York — U.S.
- Amer. Nat., New York.*—The American Naturalist, New York, or Lancaster, Pa., formerly Boston. — U.S.
- Amtl. Ber. Natgesch. Samml., Danzig.*—Amtlicher Bericht über die Verwaltung der naturgeschichtlichen vorgeschichtlichen und volksundlichen Sammlungen des westpreussischen Provinzial-Museums. Danzig. — Ger.
- An. Ac. Cs., Habana.*—Anales de la Academia de ciencias, medicas, fisicas y naturales de la Habana. — Havana, Cuba.
- An. cient. Parag., Puerto Bertoni.*—Anales científicos Paraguayos, Puerto Bertoni. — Paraguay.
- An. Inst. Geol., Mexico.*—Anales del Instituto Geológico de Mexico. — Mex.
- An. Inst. Geol. Romaniei, Bucharest.*—An. Institutul Geologic al României. Bucarest. [Annales de l'Institut géologique de Roumanie. Bucharest.] — Rou.
- An. Mus. La Plata, Buenos Aires.*—Anales de Museo de La Plata, Buenos Aires. — Argent.
- An. Mus., Montevideo.*—Anales del Museo nacional de Montevideo, Montevideo. — Uruguay.
- An. Mus. Nac., Buenos Aires.*—Anales del Museo nacional de Buenos Aires. Buenos Aires. — Argent.
- An. Mus. Nac., Mexico.*—Anales del Museo Nacional de Mexico. Mex.
- An. Soc. Cient. Argent., Buenos Aires.*—Anales de la Sociedad científica argentina, Buenos Aires. — Argent.
- An. Univ. Chile, Santiago.*—Anales de la Universidad de Chile, Santiago. — Chile.
- An. Zool. Aplic., Santiago.*—Anales de Zoologica aplicada Santiago de Chile.
- Anat. Anz., Jena.*—Anatomischer Anzeiger. Centralblatt für die gesammte wissenschaftliche Anatomie. Jena. — Ger.
- Anat. Hefte. Wiesbaden.*—Anatomische Hefte, Wiesbaden. 1. Abth.: Arbeiten aus anatomischen Instituten. 2. Abth.: Ergebnisse der Anatomie und Entwicklungsgeschichte. — Ger.
- Anat. Rec., Philadelphia.*—The Anatomical Record, Philadelphia. (Published by the Wistar Institute of Anatomy and Biology.) — U.S.
- Andvari, Reykjavik.*—Andvari Timarit hins islenzka thjóðvinafjelags. Reykjavik. — Iceland.
- Anex. Mem. Inst. Butantan, S. Paulo.*—Anexos das Memórias do Instituto de Butantan, S. Paulo. — Braz.
- Ann. Acad. Române, Bucuresci.*—Annalile Societatii Academice Române, Bucuresci (= Bucharest). — Rou.
- Ann. Acad. Sci., New York.*—Annals of the New York Academy of Sciences, New York. — U.S.
- Ann. Acad. Sci. Fenn., Helsingfors.*—Annales Academiae Scientiarum Fennicae, Helsingfors. — Fin.
- Ann. Applied Biol., Cambridge.*—The Annals of Applied Biology. The Official Organ of the Association of Economic Biologists. Cambridge, U.K.
- Ann. ass. nat., Levallois-Perret.*—Annales de l'association des naturalistes. Levallois Perret. — Fr.
- Ann. biol. lacustre, Bruxelles.*—Annales de Biologie Lacustre, Bruxelles. — Bel.
- Ann. Carnegie Mus., Pittsburg.*—Annals of the Carnegie Museum, Pittsburg, Pa. — U.S.

- Ann. Ent. Soc. Amer., Columbus, Ohio.*—Annals of the Entomological Society of America. Columbus, Ohio. — U.S.
- Ann. Fac. Sci., Marseille.*—Annales de la Faculté des Sciences de Marseille (Bouches du Rhône). — Fr.
- Ann. géol. Balkan., Belgrade.*—Annales géologiques de la péninsule Balkanique. Belgrade. — Servia.
- Ann. Géol. Pal., Turin.*—Annales de Géologie et de Paleontologie (Gregorio), Turin and Palermo. — Ital.
- Ann. Hist.-Nat. Mus. Nat. Hung., Budapest.*—Annales Historico-Naturales Musei Nationalis Hungarici, Budapest. — Hun.
- Ann. Hist. Nat., Paris.*—Annales d'Histoire Naturelle. Paris. 4to. — Fr.
- Ann. Inst. océan., Monaco.*—Annales de l'Institut océanographique de Monaco. Paris. — Fr.
- Ann. Inst. Pasteur, Paris.*—Annales de l'Institut Pasteur. Paris. — Fr.
- Ann. Mag. Nat. Hist., London.*—Annals and Magazine of Natural History, London. — U.K.
- Ann. Museo Civ. st. nat., Genova.*—Annali del Museo Civico di storia naturale, Genova. — It.
- Ann. Mus. Col., Marseille.*—Annales du Musée Colonial de Marseille. — Fr.
- Ann. Mus. Congo, Bruxelles.*—État indépendant du Congo. Annales du Musée du Congo, publiées par ordre du Secrétaire d'état. Bruxelles. 4to. — Bel.
- Ann. Mus., Durban.*—Annals of the Durban Museum, Durban. — S. Afr.
- Ann. Mus. Hist. Nat., Marseille.*—Annales du Musée d'Histoire Naturelle de Marseille. 4to. — Fr.
- Ann. Natal Govt. Mus., Pietermaritzburg.*—Annals of the Natal Government Museum, Pietermaritzburg, printed in London. — S. Afr.
- Ann. NatHist. Hofmus., Wien.*—Annalen des k. k. Naturhistorischen Hofmuseums. Wien. — Aus.
- Ann. paléont., Paris.*—Annales de Paléontologie publiées sous la direction de Marcellin Boule. Paris. — Fr.
- Ann. Queensland Mus., Brisbane.*—Annals of the Queensland Museum, Brisbane. — Queensland.
- Ann. Ramb. Soc., Kilmarnock.*—Kilmarnock Glenfield Ramblers Society Annals. — U.K.
- Ann. Rep. Chester Soc. Nat. Sci.*—Annual Report and Proceedings of the Chester Society of Natural Science, Literature and Art, Chester. — U.K.
- Ann. Rep. Christ's Hosp. Nat. Hist. Soc., Horsham.*—Annual Report of the Christ's Hospital Natural History Society, Horsham. — U.K.
- Ann. Rep. E. Kent Nat. Hist. Soc., Canterbury.*—Annual Report and Transactions of the East Kent Scientific and Natural History Society, Canterbury. — U.K.
- Ann. Rep. Ent. Soc. Ont., Toronto.*—Annual Report of the Entomological Society of Ontario, Toronto. — Can.
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- Anz Orn. Ges. Bay., München.*—Anzeiger der Ornithologischen Gesellschaft in Bayern, München. — Ger.
- Aquila, Budapest.*—Aquila, Budapest. — Hun.
- Arb. Anat. Inst. Univ., Sendai.*—Arbeiten aus dem anatomischen Institute der Kaiserlich-Japanischen Universität zu Sendai. — Jap.
- Arb. biol. Anst., Berlin.*—Arbeiten aus der biologischen Anstalt für Land- und Forstwirtschaft (vormals Biologische Abteilung für Land- und Forstwirtschaft am Kaiserl. Gesundheitsamte). Berlin. — Ger.
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- Arb. hirnanat. Inst. Zürich, Wiesbaden.*—Arbeiten aus dem hirnanatomischen Institut in Zürich. Wiesbaden. — Ger.
- Arb. Naturf.-Ver., Riga.*—Arbeiten des Naturforscher-Vereins zu Riga. — Latv.
- Arb. path. Inst., Tübingen.*—Arbeiten auf dem Gebiete der pathologischen Anatomie, u. Bakteriologie aus dem pathologisch-anatomischen Institut zu Tübingen. Braunschweig. — Ger.
- Arb. Zool. Inst. Univ., Wien.*—Arbeiten aus den Zoologischen-Instituten der Universität Wien und der Zoologischen Station in Triest. Wien. — Aus.
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- Arch. EntwMech., Leipzig.*—Archiv für Entwicklungsmechanik der Organismen. Leipzig. — Ger.
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- Arch. exper. Path., Leipzig.*—Archiv für experimentelle Pathologie und Pharmakologie. Leipzig. — Ger.
- Arch. fisiol., Firenze.*—Archivio di fisiologia, Firenze. — It.
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- Arch. ges. Psychol., Leipzig.*—Archiv für die gesammte Psychologie. Leipzig. — Ger.
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- Arch. Hydrobiol., Stuttgart.*—Archiv für Hydrobiologie und Planktonkunde (N. F. der Forschungsberichte a. d. biolog. Station zu Plön). Stuttgart. — Ger.
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- Arch. Inst. Pasteur Afr. N., Algiers.*—Archives des Instituts Pasteur de l'Afrique du Nord. Alternately Algiers and Tunis. — Algeria.
- Arch. Ital. Anat. Embr., Firenze.*—Archivio Italiano di Anatomia e di Embriologia, Firenze. — Ital.
- Arch. ital. biol., Torino.*—Archives italiennes de biologie, Torino. — It.
- Arch. Landesk. Sachsen, Halle.*—Archiv für Landes- und Volkskunde der Provinz Sachsen. Halle. — Ger.
- Arch. Math. Naturv., Kristiania.*—Archiv for Mathematik og Naturvidenskab, Kristiania. — Nor.
- Arch. Melit., Valetta.*—Archivum Melitense: Journal of the Malta Historical and Scientific Society. Valetta. — Malta.
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- Arch. Molluskenkunde, Frankfurt.*—Archiv für Molluskenkunde als Nachrichtenblatt der Deutschen Malakozoologischen Gesellschaft, Frankfurt-a.-M. — Ger.
- Arch. Mus. hist. nat., Lyon.*—Archives de Muséum d'histoire naturelle. Lyon (Rhône). — Fr.
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- Arch. Rassenbiol., Leipzig.*—Archiv für Rassen- und Gesellschaftsbiologie einschließlich Rassen- und Gesellschaftshygiene. Leipzig. — Ger.
- Arch. Schiffs- Tropen-Hygiene, Leipzig.*—Archiv für Schiffs- und Tropen-Hygiene, Pathologie und Therapie exotischer Krankheiten. Leipzig. — Ger.
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- Arch. Tierheilk., Berlin.*—Archiv für wissenschaftliche und praktische Tierheilkunde. Berlin. — Ger.
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- Ark. Zool., Stockholm.*—Arkiv för zoologie utgifvet af K. Svenska Vetenskapsakademien i Stockholm. — Swe.
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- Atti Acc. Lincei, Roma.*—Atti della Reale Accademia dei Lincei; Rendiconti, Roma. — It.
- Atti Acc. Nuovi Lincei, Roma.*—Atti dell' Accademia pontificia dei Nuovi Lincei, Roma. — It.
- Atti Acc., Palermo.*—Atti dell' Accademia di scienze, lettere ed arti, Palermo. — It.
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- Atti Acc. sc., Napoli.*—Atti della R. Accademia delle scienze fisiche e matematiche, Napoli. — It.
- Atti Acc. sc., Torino.*—Atti della R. Accademia delle scienze, Torino. — It.
- Atti Acc. ven.-trent., Padova.*—Atti dell' Accademia scientifica veneto-trentinistriana, Padova. — It.
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- Ber. natf. Ges., Bamberg.*—Bericht der naturforschenden Gesellschaft in Bamberg. — Ger.
- Ber. natf. Ges., Freiburg i. B.*—Berichte der naturforschenden Gesellschaft zu Freiburg i. B. Freiburg i. B. — Ger.
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- Ber. Natw. Med. Ver., Innsbruck.*—Berichte des Naturwissenschaftlich-Medizinischen Vereines in Innsbruck. Innsbruck. — Aus.
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- Bol. Ac. Córdoba, Buenos Aires*.—*Boletín de la Academia nacional de Ciencias en Córdoba, Buenos Aires*. — Argent.
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- Bol. Inst. Geol., Mexico*.—*Boletín del Instituto Geológico de Mexico*. — Mex.
- Bol. Inst. Geol. Esp., Madrid*.—*Boletín del Instituto Geológico de España, Madrid*. — Spain.
- Bol. Mus. Goeldi, Pará*.—*Boletim do Museu Goeldi de Historia natural e ethnographia (Museu paraense), Pará*. — Braz.
- Bol. Mus. Nac., Santiago*.—*Boletim de Museo Nacional de Chile, Santiago*. — Chile.
- Bol. R. Ac. Cs., Barcelona*.—*Boletín de la Real Academia de Ciencias y Artes de Barcelona. Barcelona*. — Spain.
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- Bol. Soc. ent. Brasil, Rio de Janeiro*.—*Boletim da Sociedade Entomologica do Brasil, Rio de Janeiro*. — Brazil.
- Bol. Soc. Ent. España, Zaragoza*.—*Boletín de la Sociedad Entomologica de España, Zaragoza*. — Spain.
- Bol. Soc. Esp. Hist. Nat., Madrid*.—*Boletín de la Real Sociedad Española de Historia Natural, Madrid*. — Spain.
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- Boll. Lab. zool., Portici*.—*Bollettino del Laboratorio di Zoologia generale e agraria della R. Scuola superiore d'Agricoltura in Portici. Portici*. — It.
- Boll. Musei zool. anat. comp., Torino*.—*Bollettino dei Musei di zoologia e di anatomia comparata della R. Università, Torino*. — It.
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- Bul. Acad. roy., Bruxelles*.—Bulletin de la classe des sciences de l'Académie royale des sciences, des lettres et des beaux arts de Belgique. Bruxelles. — Bel.
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